PIONEER®
The Art of Entertainment

DEH-P945R/EW

ORDER NO.
CRT2207

Service Manual

MULTI-CD/MD/DAB CONTROL DSP HIGH POWER CD PLAYER WITH RDS TUNER
DEH-P945R EW
MULTI-CD/MD/DAB CONTROL DSP CD PLAYER WITH RDS TUNER
DEX-P99R EW

COMPACT DISC DIGITAL AUDIO

● See the separate manual CX-680(CRT2216) for the CD mechanism description, disassembly and circuit description.
● The CD mechanism employed in this model is one of H1 series.

CONTENTS

K-FEA. JUNE 1998 Printed in Japan

● **CD Player Service Precautions**

1. For pickup unit(CXX1290) handling, please refer to"Disassembly"(CX-680 Service Manual CRT2216). During replacement, handling precautions shall be taken to prevent an electrostatic discharge(protection by a short pin).

2. During disassembly, be sure to turn the power off since an internal IC might be destroyed when a connector is plugged or unplugged.
3. Please checking the grating after changing the service pickup unit(see page 81).

1. SAFETY INFORMATION

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer.
Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.
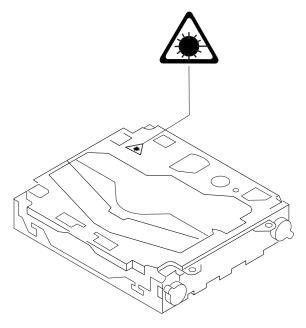Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely; you should not risk trying to do so and refer the repair to a qualified service technician.

1. **Safety Precautions for those who Service this Unit.**
• **When checking or adjusting the emitting power of the laser diode exercise caution in order to get safe, reliable results.**

Caution:
   1. During repair or tests, minimum distance of 13cm from the focus lens must be kept.
   2. During repair or tests, do not view laser beam for 10 seconds or longer.

2. **A "CLASS 1 LASER PRODUCT" label is affixed to the rear of the player.**

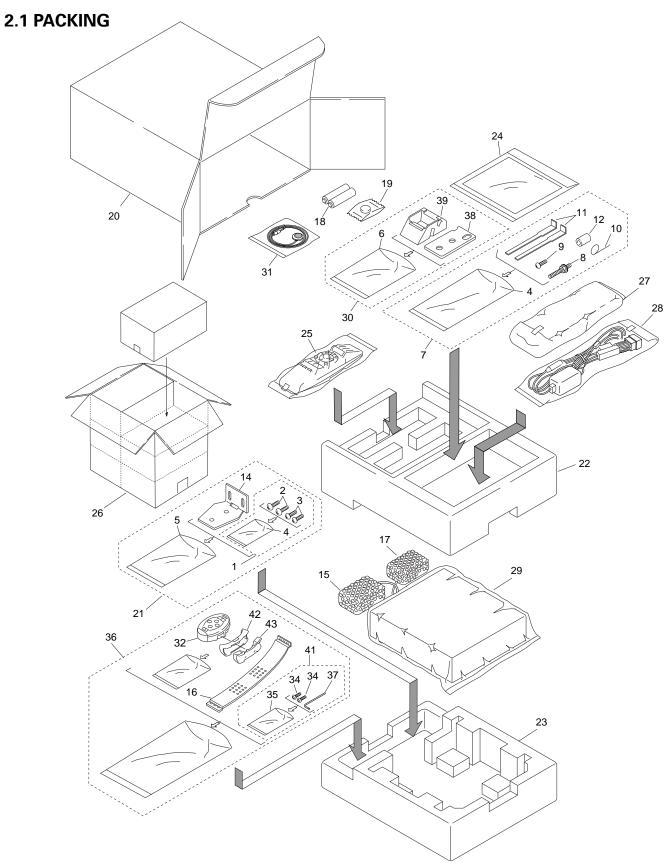3. **The triangular label is attached to the mechanism unit frame.**

4. **Specifications of Laser Diode**

Specifications of laser radiation fields to which human access is possible during service.
Wavelength   =   800 nanometers

2. EXPLODED VIEWS AND PARTS LIST

2.1 PACKING

DEH-P945R,DEX-P99R

NOTE:

● Parts marked by "*"are generally unavailable because they are not in our Master Spare Parts List.

● Screws adjacent to ∇ mark on the product are used for disassembly.

● **PACKING SECTION PARTS LIST**

(1) PARTS LIST

Mark	No.	Description	Part No.
	1	Screw Assy	CZE3198
	2	Screw	BNC40P120FZK
	3	Screw	BPZ30P100FZK
*	4	Polyethylene Bag	CEG-127
*	5	Polyethylene Bag	CZE3201
	6	Polyethylene Bag	CZE3188
*	7	Accessory Assy	CEA2429
	8	Screw	CBA1002
	9	Screw	CBA1120
	10	Spring	CBH-865
	11	Handle	CNC5395
	12	Bush	CNV1917
*	13	Polyethylene Bag	E36-615
	14	Bracket	CZN6467
	15	Air Cushioned Bag	CEG1080
	16	Belt	CZN6416
	17	Air Cushioned Bag	CEG1192
	18	Battery	CEX1006
	19	Battery	CEX1030
	20	Carton	See Contrast table(2)
	21	Bracket Assy	CEA2346
	22	Protector	CHP2089
	23	Protector	CHP2090
	24-1	Owner's Manual	CRD2727
	24-2	Owner's Manual	CRD2728

Mark	No.	Description	Part No.
	24-3	Owner's Manual	CRD2729
	24-4	Installation Manual	CRD2655
	24-5	Installation Manual	CRD2656
	24-6	Installation Manual	CRD2657
	24-7	Polyethylene Bag	CEG1116
	25	Remote Control Assy	CXB2660
	25-1	Polyethylene Bag	CEG1011
	26	Contain Box	CHD2637
	27	Case Assy	CXA7194
	28	Cord Assy	See Contrast table(2)
	29	Cover	CEG1088
	30	Base Assy	CEA2426
	31	Microphone Assy	CPM1022
	32	Remote Control Assy	CZX3218
	33	•••••	
*	34	Screw	RMZ30H060FBK
*	35	Polyethylene Bag	CEG-127
	36	Remote Control Assy	CXB2636
*	37	Hexagonal Wrench	CZE3176
	38	Sheet	CZA3371
	39	Base	CNS5031
	40	•••••	
	41	Screw Assy	CZE3169
	42	Holder Assy	CZX3172
	43	Holder Assy	CZX3173

4

● **Owner's Manual**

Model	Part No.	Language
DEH-P945R/EW	CRD2652	English, Spanish
	CRD2653	German, French
	CRD2654	Italian, Dutch
DEX-P99R/EW	CRD2727	English, Spanish
	CRD2728	German, French
	CRD2729	Italian, Dutch

● **Installation Manual**
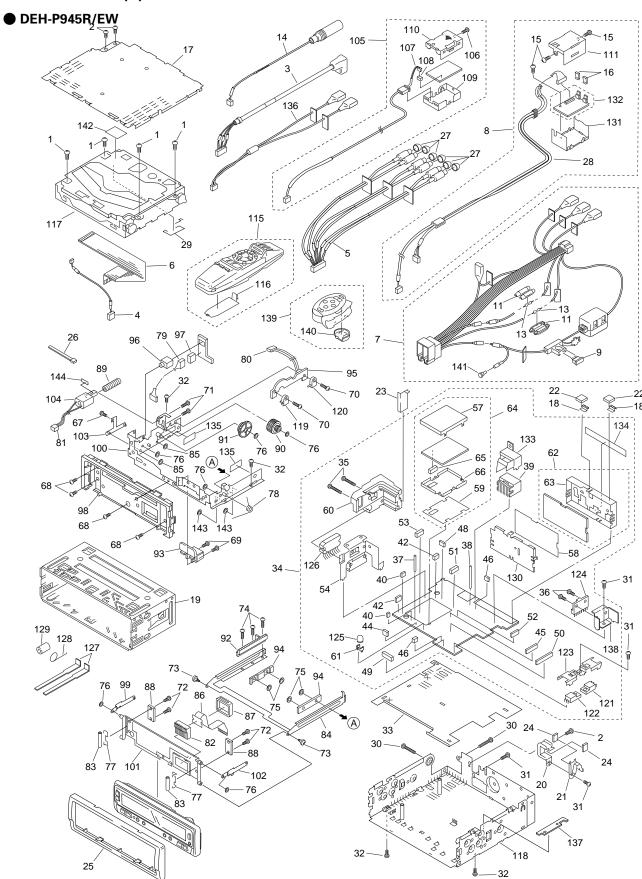
Model	Part No.	Language
DEH-P945R/EW, DEX-P99R/EW	CRD2655	English, Spanish
	CRD2656	German, French
	CRD2657	Italian, Dutch

(2) CONTRAST TABLE

DEH-P945R/EW and DEX-P99R/EW are constructed same except for the following:

		Part No.	
Mark No.	Symbol and Description	DEH-P945R/EW	DEX-P99R/EW
20	Carton	CHG3534	CHG3533
28	Cord Assy	CDE5730	CDE5657

2.2 EXTERIOR (1)
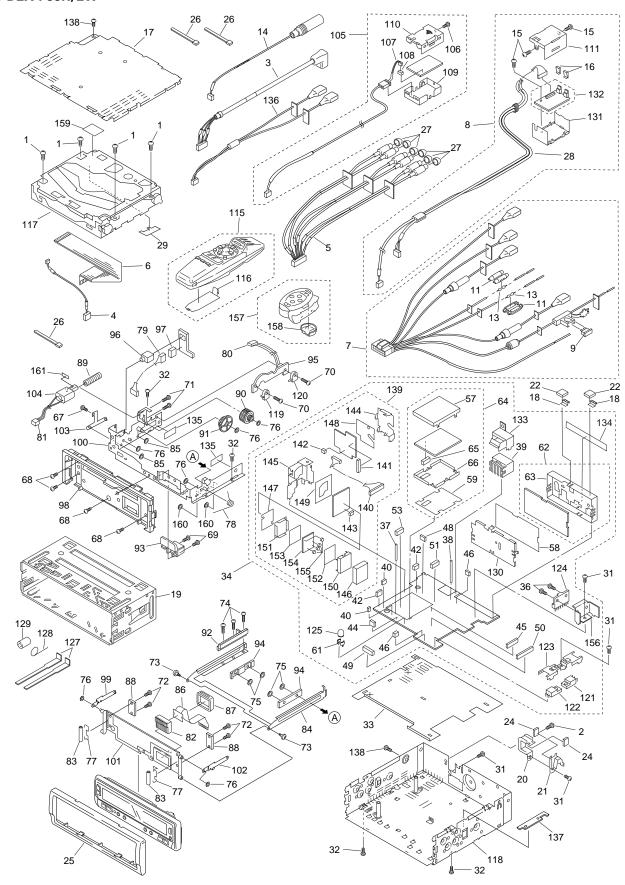
● **DEH-P945R/EW**

● **EXTERIOR (1) SECTION PARTS LIST**

Mark	No.	Description	Part No.
	1	Screw	BSZ26P050FMC
	2	Screw	BSZ30P055FMC
	3	Cord Assy	CDE5785
	4	Cord	CDE5536
	5	Cord Assy	CDE5625
	6	Connector	CDE5543
	7	Cord Assy	CDE5730
	8	Inverter Assy	MWM9028
	9	Fuse	CEK1136
	10	•••••	
	11	Cap	CNS1472
	12	Choke Coil	CTH1127
	13	Resistor	RS1/2PMF102J
	14	Antenna Cable	CDH1115
	15	Screw	BSZ26P050FMC
	16	Clip	MBK9001
	17	Case	CNB2278
	18	Earth Terminal	CNC7358
	19	Holder	CNC6798
	20	Holder	CNC7566
	21	Holder	CNC7753
	22	Spacer	CNM4913
	23	Spacer	CNM5793
	24	Cushion	CNM5811
	25	Panel	CNS4553
*	26	Lock Tie	CNV-754
	27	Cap	CNV2680
	28	Cord	MDE9012
	29	Spacer	CNM5997
	30	Screw	BMZ30P180FMC
	31	Screw	BSZ26P080FMC
	32	Screw	CBA1447
	33	Insulator	CNM5627
	34	Tuner Amp Unit	CWM5696
	35	Screw	BMZ26P200FMC
	36	Screw	BSZ30P055FMC
	37	Clamper	CEF1008
	38	Clamper	CEF1009
	39	Plug(CN901)	CKM1278
	40	Plug(CN221,851)	CKS-783
	41	•••••	
	42	Plug(CN141,852)	CKS-784
	43	•••••	
	44	Plug(CN131)	CKS-786
	45	Plug(CN101)	CKS1044

Mark	No.	Description	Part No.
	46	Plug(CN451,804)	CKS1222
	47	•••••	
	48	Plug(CN803)	CKS1225
	49	Connector(CN801)	CKS1564
	50	Connector(CN671)	CKS2779
	51	Connector(CN681)	CKS3583
	52	Connector(CN231)	CKS3592
	53	Connector(CN222)	CKS3781
	54	Holder	CNC7554
	55	Holder	CNC7557
	56	Holder	CNC7559
	57	Case	CNC8014
	58	Insulator	CNM4684
	59	Insulator	CNM5626
	60	Heat Sink	CNR1468
	61	Holder	CNV1906
	62	FM/AM Tuner Unit	CWE1416
	63	Holder	CNC6555
	64	DSP Unit	CWX2214
	65	Connector(CN3001)	CKS3782
	66	Case	CNC8015
	67	Screw	BMZ20P030FMC
	68	Screw	BMZ20P030FZK
	69	Screw	BPZ20P060FMC
	70	Screw	CBA1060
	71	Screw	CBA1061
	72	Screw	CBA1082
	73	Screw	CBA1430
	74	Screw	CBA1454
	75	Washer	CBF1038
	76	Washer	CBF1039
	77	Spring	CBH2063
	78	Spring	CBH2086
	79	Cord	CDE5587
	80	Cord	CDE5596
	81	Cord	CDE5597
	82	Socket	CKS2497
	83	Roller	CLA3458
	84	Frame	CNC7548
	85	Spacer	CNM5808
	86	PCB	CNP5065
	87	Cover	CNS4841
	88	Holder	CNV2141
	89	Gear	CNV5271
	90	Torque Limiter Unit	CNV5272

DEH-P945R,DEX-P99R

Mark	No.	Description	Part No.
	91	Gear	CNV5273
	92	Rack	CNV5274
	93	Lighting Conductor	CNV5276
	94	Guide	CNV5356
	95	Gathering PCB	CNX2961
	96	Mini Jack(CN4602)	CKN1015
	97	Plug(CN4601)	CKS-786
	98	Panel Unit	CXB2212
	99	Arm Unit	CXB2215
	100	Frame Unit	CXB2216
	101	Holder Unit	CXB2217
	102	Arm Unit	CXB2218
	103	Bracket Unit	CXB2598
	104	Motor	CXM1085
	105	ASL Unit	CWX2216
	106	Screw	BSZ30P055FMC
	107	Cord	CDE5763
	108	Plug(CN4501)	CKS-784
	109	Case	CNB2299
	110	Case	CNB2300
	111	Holder	MNC9008
	112	Holder Assy	CZX3172
	113	Holder Assy	CZX3173
	114	Cover	CZN6410
	115	Remote Control Assy	CXB2660

Mark	No.	Description	Part No.
	116	Battery Cover	CNS5032
	117	CD Mechanism Module(H1)	CXK5101
	118	Chassis Unit	CXB2229
	119	Switch(S951)	CSN1012
	120	Switch(S952)	CSN1022
	121	IC(IC871)	NJM78M05FA
	122	Trangistor(Q992)	2SD2396
	123	Holder	CNC8013
	124	IC(IC941)	PA2024
	125	Lamp(IL801)	CEL1359
	126	IC(IC301)	TDA7386
	127	Handle	CNC5395
	128	Spring	CBH-865
	129	Bush	CNV1917
	130	Holder	CNC8021
	131	Holder	MNC9009
	132	Inverter Unit	MWM9026
	133	Holder	CNC8011
	134	Spacer	CNM5996
	135	Spacer	CNM5988
	136	Cord Assy	CDE5539
	137	Guide Unit	CXB3234
	138	Holder	CNC8012
	139	Remote Control Assy	CZX3218
	140	Cover	CZN6410
	141	Terminal Cover	CKX-003
	142	Cushion	CNM6065
	143	Spacer	CNM6069
	143	Spacer	CNM6093

● **DEX-P99R/EW**

DEH-P945R,DEX-P99R

● **EXTERIOR (1) SECTION PARTS LIST**

Mark	No.	Description	Part No.
	1	Screw	BSZ26P050FMC
	2	Screw	BSZ30P055FMC
	3	Cord Assy	CDE5785
	4	Cord	CDE5536
	5	Cord Assy	CDE5545
	6	Connector	CDE5543
	7	Cord Assy	CDE5657
	8	Inverter Assy	MWM9028
	9	Fuse	CEK1001
	10	Cover	CKX-003
	11	Cap	CNS1472
	12	Choke Coil	CTH1127
	13	Resistor	RS1/2PMF102J
	14	Antenna Cable	CDH1115
	15	Screw	BSZ26P050FMC
	16	Clip	MBK9001
	17	Case	CNB2279
	18	Earth Terminal	CNC7358
	19	Holder	CNC6798
	20	Holder	CNC7566
	21	Holder	CNC7753
	22	Spacer	CNM4913
	23	•••••	
	24	Cushion	CNM6062
	25	Panel	CNS4553
*	26	Lock Tie	CNV-754
	27	Cap	CNV2680
	28	Cord	MDE9012
	29	Spacer	CNM5997
	30	•••••	
	31	Screw	BSZ26P080FMC
	32	Screw	CBA1447
	33	Insulator	CNM5627
	34	Tuner Amp Unit	CWM5695
	35	•••••	
	36	Screw	BSZ30P055FMC
	37	Clamper	CEF1008
	38	Clamper	CEF1009
	39	Plug(CN901)	CKM1278
	40	Plug(CN221,851)	CKS-783
	41	•••••	
	42	Plug(CN141,852)	CKS-784
	43	•••••	
	44	Plug(CN131)	CKS-786
	45	Plug(CN101)	CKS1044

Mark	No.	Description	Part No.
	46	Plug(CN451,804)	CKS1222
	47	•••••	
	48	Plug(CN803)	CKS1225
	49	Connector(CN801)	CKS1564
	50	Connector(CN671)	CKS2779
	51	Connector(CN681)	CKS3583
	52	•••••	
	53	Connector(CN222)	CKS3781
	54	•••••	
	55	Holder	CNC7557
	56	Holder	CNC7559
	57	Case	CNC8014
	58	Insulator	CNM4684
	59	Insulator	CNM5626
	60	•••••	
	61	Holder	CNV1906
	62	FM/AM Tuner Unit	CWE1416
	63	Holder	CNC6555
	64	DSP Unit	CWX2214
	65	Connector(CN3001)	CKS3782
	66	Case	CNC8015
	67	Screw	BMZ20P030FMC
	68	Screw	BMZ20P030FZK
	69	Screw	BPZ20P060FMC
	70	Screw	CBA1060
	71	Screw	CBA1061
	72	Screw	CBA1082
	73	Screw	CBA1430
	74	Screw	CBA1454
	75	Washer	CBF1038
	76	Washer	CBF1039
	77	Spring	CBH2063
	78	Spring	CBH2086
	79	Cord	CDE5587
	80	Cord	CDE5596
	81	Cord	CDE5597
	82	Socket	CKS2497
	83	Roller	CLA3458
	84	Frame	CNC7548
	85	Spacer	CNM5808
	86	PCB	CNP5065
	87	Cover	CNS4841
	88	Holder	CNV2141
	89	Gear	CNV5271
	90	Torque Limiter Unit	CNV5272

Mark No.	Description	Part No.
91	Gear	CNV5273
92	Rack	CNV5274
93	Lighting Conductor	CNV5276
94	Guide	CNV5356
95	Gathering PCB	CNX2961
96	Mini Jack(CN4602)	CKN1015
97	Plug(CN4601)	CKS-786
98	Panel Unit	CXB2212
99	Arm Unit	CXB2215
100	Frame Unit	CXB2216
101	Holder Unit	CXB2217
102	Arm Unit	CXB2218
103	Bracket Unit	CXB2598
104	Motor	CXM1085
105	ASL Unit	CWX2216
106	Screw	BSZ30P055FMC
107	Cord	CDE5763
108	Plug(CN4501)	CKS-784
109	Case	CNB2299
110	Case	CNB2300
111	Holder	MNC9008
112	Holder Assy	CZX3172
113	Holder Assy	CZX3173
114	Cover	CZN6410
115	Remote Control Assy	CXB2660
116	Battery Cover	CNS5032
117	CD Mechanism Module(H1)	CXK5101
118	Chassis Unit	CXB2228
119	Switch(S951)	CSN1012
120	Switch(S952)	CSN1022
121	IC(IC871)	NJM78M05FA
122	Trangistor(Q992)	2SD2396
123	Holder	CNC8013
124	IC(IC941)	PA2024
125	Lamp(IL801)	CEL1359

Mark No.	Description	Part No.
126	•••••	
127	Handle	CNC5395
128	Spring	CBH-865
129	Bush	CNV1917
130	Holder	CNC8021
131	Holder	MNC9009
132	Inverter Unit	MWM9026
133	Holder	CNC8011
134	Spacer	CNM5996
135	Spacer	CNM5988
136	Cord Assy	CDE5539
137	Guide Unit	CXB3234
138	Screw	BMZ30P040FMC
139	High Out Unit	CWX2215
140	Cord Assy	CDE5555
141	Plug(CN4153)	CKS1045
142	Plug(CN4152)	CKS1613
143	Plug(CN4051)	CKS1614
144	Holder	CNC8009
145	Holder	CNC7556
146	Shield	CNC8010
147	Insulator	CNM4760
148	Insulator	CNM5650
149	Insulator	CNM5651
150	Shield	CNC6224
151	Shield	CNC6274
152	Insulator	CNM4610
153	Insulator	CNM4814
154	D/D Converter Unit	CWM4538
155	Terminal (CN4001,4002,4003,4004)	CKF1023
156	Holder	CNC8012
157	Remote Control Assy	CZX3218
158	Cover	CZN6410
159	Cushion	CNM6065
160	Spacer	CNM6069
161	Spacer	CNM6093

2.3 EXTERIOR (2)

● **EXTERIOR (2) SECTION PARTS LIST**

(1) PARTS LIST
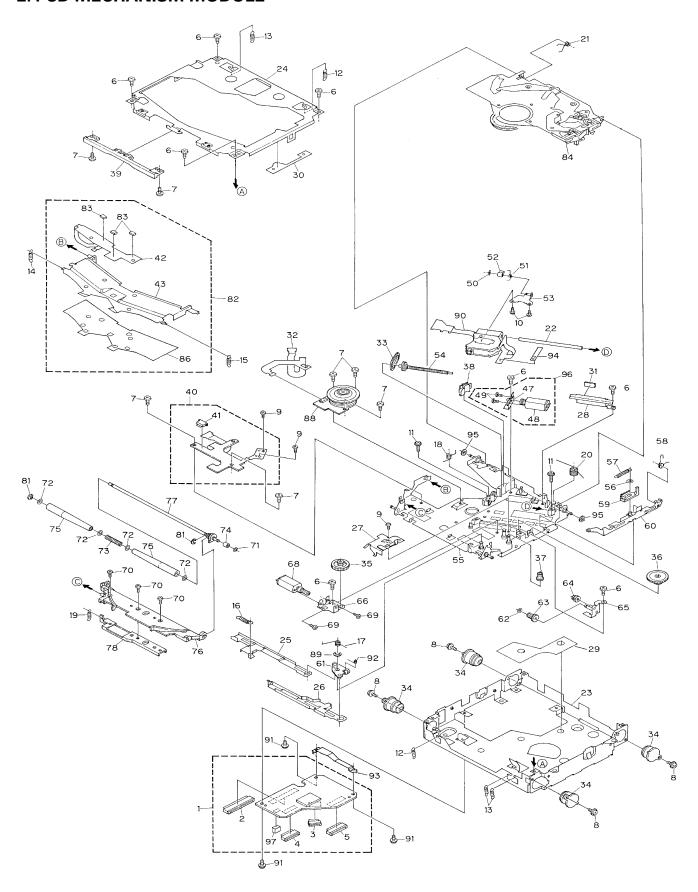
Mark	No.	Description	Part No.
	1	Grille Unit	See Contrast table(2)
	2	Button	CAC5488
	3	Button	CAC5494
	4	Button	CAC5504
	5	Spacer	CNM6021
	6	Spacer	CNM5910
	7	Button	CAC5486
	8	Keyboard Unit	See Contrast table(2)
	9	Holder	CNC7547
*	10	LCD(LCD1901)	See Contrast table(2)

Mark	No.	Description	Part No.
	11	PCB	CNP5063
	12	Spacer	CNM5894
	13	EL(EL1901)	CEL1580
	14	Spacer	CNM5623
	15	Spacer	CNM5622
	16	Plug(CN1901)	CKS2496
	17	Cover Unit	CXB2208
	18	Screw	BPZ20P080FZK
	19	Button	CAC5491

(2) CONTRAST TABLE

DEH-P945R/EW and DEX-P99R/EW are constructed same except for the following:

			Part No.	
Mark No.	Symbol and Description		DEH-P945R/EW	DEX-P99R/EW
	1	Grille Unit	CXB2203	CXB2202
	8	Keyboard Unit	CWM5688	CWM5687
*	10	LCD(LCD1901)	CAW1471	CAW1493

2.4 CD MECHANISM MODULE

● **CD MECHANISM MODULE SECTION PARTS LIST**

Mark	No.	Description	Part No.
	1	Control Unit	CWX2166
	2	Connector(CN701)	CKS1968
	3	Connector(CN802)	CKS3477
	4	Connector(CN801)	CKS3481
	5	Connector(CN101)	CKS3486
	6	Screw	BMZ20P025FMC
	7	Screw	CBA1037
	8	Screw	CBA1296
	9	Screw	CBA1340
	10	Screw	CBA1362
	11	Screw	CBA1440
	12	Spring	CBH2029
	13	Spring	CBH2030
	14	Spring	CBH2031
	15	Spring	CBH2032
	16	Spring	CBH2033
	17	Spring	CBH2207
	18	Spring	CBH2040
	19	Spring	CBH2041
	20	Spring	CBH2042
	21	Spring	CBH2052
	22	Shaft	CLA3232
	23	Frame	CNC7285
	24	Frame	CNC7286
	25	Lever	CNC7288
	26	Lever	CNC7289
	27	Cover	CNC7294
	28	Cover	CNC7304
	29	Sheet	CNM5401
	30	Sheet	CNM5402
	31	Sheet	CNM5814
	32	PCB	CNP4854
	33	Belt	CNT1082
	34	Damper	CNV4984
	35	Gear	CNV5080
	36	Gear	CNV5081
	37	Gear	CNV5082
	38	Holder	CNV5098
	39	Guide	CNV5352
	40	Mechanism FPC Unit	CWX2191
	41	Connector	CKS3767
*	42	PCB	CNP4852
*	43	Arm	CNC7287
	44	•••••	
	45	•••••	
	46	•••••	
	47	Bracket	CNC7300
	48	Motor Unit	CXB1671
	49	Screw	JFZ14P020FNI
	50	Washer	CBF1037

Mark	No.	Description	Part No.
	51	Spring	CBH2039
	52	Lack	CNV5471
	53	Bracket Unit	CXB1674
	54	Screw Unit	CXB1676
	55	Chassis Unit	CXB3042
	56	Washer	CBF1038
	57	Spring	CBH2035
	58	Spring	CBH2036
	59	Lever	CNV5078
	60	Lever Unit	CXB3207
	61	Arm Unit	CXB1680
	62	Washer	CBF1038
	63	Gear	CNV5083
	64	Gear	CNV5084
	65	Bracket Unit	CXB1682
	66	Bracket	CNC7292
	67	•••••	
	68	Motor Unit(M2)	CXB1684
	69	Screw	JFZ14P020FNI
	70	Screw	CBA1451
	71	Washer	CBF1037
	72	Washer	CBF1060
	73	Spring	CBH2170
	74	Roller	CLA3222
	75	Roller	CNV3412
	76	Arm	CNV5075
	77	Gear Unit	CXB1686
	78	Bracket Unit	CXB2627
	79	•••••	
	80	•••••	
	81	Washer	YE20FUC
	82	Guide Arm Assy	CXB1688
	83	Photo-transistor(P1-3)	CPT-230S-X
	84	Clamp Arm Assy	CXB3137
	85	•••••	
*	86	Sheet	CNM5398
	87	•••••	
	88	Motor(M3)	CXM1129
	89	Washer	YE25FUC
	90	Pickup Unit(Service)(P8)	CXX1290
	91	Screw	IMS20P035FMC
	92	Spring	CBH2206
	93	Bracket	CNC7977
	94	Sheet	CNM6039
	95	Sheet	CNM6055
	96	CRG Motor Assy(M1)	CXB1670
	97	Connector(CN702)	CKS2191

3. SCHEMATIC DIAGRAM

3.1 OVERALL CONNECTION DIAGRAM(GUIDE PAGE)

Note: When ordering service parts, be sure to refer to "EXPLODED VIEWS AND PARTS LIST" or "ELECTRICAL PARTS LIST".

A-a

A-b

DEH-P945R,DEX-P99R

A-a　A-b

A-a

A

This page is a full-page electronic schematic diagram for the DEH-P945R, DEX-P99R units, containing components including IC551 (PD4931A CD μCOM), CN3001, and the TUNER AMP UNIT, HIGH OUT UNIT sections with numerous resistor, capacitor and transistor labels.

A TUNER AMP UNIT

E G H HIGH OUT UNIT

F

D CN702

A-b

A-b

3.2 CD MECHANISM MODULE(GUIDE PAGE)

D-b

NOTE 1) GND ...CD LSI (AGND Analog,DGND Digital)
         PGND ...Actuator,Motor Driver
         AAGND ...Audio
         These GND's are not connected to each other
         on PCB, though they use same symbols in this
         schematic.
         PGND is connected to a chassis by a screw.
NOTE 2) Pull-up resistors of EJTSNS,DSCSNS should be
         47kΩ.

NOTE :
⊏⊐ Symbol indicates a resistor.
   No differentiation is made between chip resistors and
   discrete resistors.

⊣⊢ Symbol indicates a capacitor.
   No differentiation is made between chip capacitors and
   discrete capacitors.

Decimal points for resistor
and capacitor fixed values
are expressed as:
2.2→2R2
0.022→R022

D

D-a D-b

A CN671

[I/O]

ROUT (SCLK)
AAGND (IDQSY)
LOUT (SRDT)
CDMUTE
SCONT
VD
+8.3V
XRST
XA0
XSTB
XS1
XS0
XSCK
CLAMP
FOK
MIRR
LOCK
CONT
CD5VON
CDLOAD
CDEJET
DSCSNS
EJTSNS
GND
GND
DOUT (SCLK)
SCKO (IDQSY)
LRCK (SRDT)
PGND
PGND
DIGOUT (CSEL)

CN701

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

SL

R703 220

R705 1K
R707 680
R708 680
R706 680
R709 680

XSCK
XRST XSTB
XA0
XS0

R718 1K
R310 1K
R311 1K
R714 1K

CDEJET
CONT
CDLOAD TP708
CD5VON TP707
TP706

LRCK TP713
SCKO
DOUT
CPD0 TP709
SCK0 TP710
LRCK TP711

DIGOUT

XRST
XA0
XSTB
XS1
XS0
XSCK

CLAMP
FOK ⑤
MIRR
LOCK
CONT
LOAD
EJ
DSCSNS
EJTSNS

FOK
MIRR
LOCK

⑲ ROUT
AAGND AAGND
⑳ LOUT
CDMUTE
SCONT
⑱ VD

VD
GND
PGND

PGND

Decimal points for resistor
and capacitor fixed values
are expressed as:
2.2→2R2
0.022→R022

NOTE:
▭ : Symbol indicates a resistor.
No differentiation is made between chip resistors and
discrete resistors.

─┤├─ : Symbol indicates a capacitor.
No differentiation is made between chip capacitors and
discrete capacitors.

GND ...CD LSI (AGND Analog,DGND Digital)
PGND ...Actuator,Motor Driver
AAGND ...Audio
These GND's are not connected to each other
on PCB,though they use same symbols in this
schematic.
PGND is connected to a chassis by a screw.
Pull-up resistors of EJTSNS,DSCSNS should be
47kΩ.

D-b

DEH-P945R,DEX-P99R

Note:1. The encircled numbers denote measuring pointes in the circuit diagram.
2. Reference voltage
REFO:2.5V

● **Waveforms**

① RFO 0.5V/div. 0.5µs/div. Normal mode: play	① CH1: RFO 1V/div. 0.5ms/div. ② CH2: MIRR 5V/div. Test mode: Tracking open	① CH1: RFO 1V/div. 0.5ms/div. ② CH2: MIRR 5V/div. Normal mode: The defect part passes 800µm
REFO →	GND →	GND →
③ CH1: FIN 0.5V/div. 0.2s/div. ④ CH2: FO+ 2V/div. Test mode: No disc, Focus close	③ CH1: FIN 0.5V/div. 0.2s/div. ⑤ CH2: FOK 2V/div. Normal mode: Focus close	⑥ CH1: FEY 0.5V/div. 1ms/div. ⑦ CH2: XSI 2V/div. Normal mode: Focus close
REFO → REFO →	REFO → REFO → GND →	REFO → REFO → GND →
⑧ CH1: TEY 0.5V/div. 0.5ms/div. ⑨ CH2: TIN 0.5V/div. Test mode: 32 tracks jump (FWD)	⑧ CH1: TEY 0.5V/div. 0.5ms/div. ⑨ CH2: TIN 0.5V/div. Test mode: Single jump (FWD)	⑧ CH1: TEY 0.5V/div. 5ms/div. ⑨ CH2: TIN 0.5V/div. Test mode: 100 tracks jump (FWD)
REFO → REFO →	REFO → REFO →	REFO → REFO →
⑥ CH1: FEY 0.1V/div. 20ms/div. ③ CH2: FIN 0.2V/div. Normal mode: Play	③ CH1: FIN 0.5V/div. 0.5s/div. ⑩ CH2: SIN 1V/div. Normal mode: Focus close (12cm)	③ CH1: FIN 0.5V/div. 0.5s/div. ⑩ CH2: SIN 1V/div. Normal mode: Focus close (8cm)
REFO → REFO →	REFO → REFO →	REFO → REFO →

⑧ CH1: TEY 0.2V/div.
⑨ CH2: TIN 0.2V/div. 20ms/div.
Normal mode: play

⑧ CH1: TEY 0.5V/div.
⑪ CH2: SD 0.5V/div. 5ms/div.

⑩ SIN 0.5V/div. 0.1s/div.
Normal mode: Play (12cm)

⑩ SIN 1V/div. 10ms/div.
Long Search (12cm)

⑫ EFM 1V/div. 5µs/div.
Play

⑧ CH1: TEY 1V/div.
⑬ CH2: TEC 1V/div. 2ms/div.
Test mode: Focus close
Tracking open

⑧ CH1: TEY 0.5V/div.
⑥ CH2: FEY 0.5V/div. 0.2s/div.
Normal mode: AGC after focus close

⑭ PLCK 2V/div. 0.5µs/div.
Play

⑮ SCKO 2V/div. 1µs/div.
Play

⑯ Dout 2V/div. 10µs/div.
Play

⑰ LRCK 2V/div. 20µs/div.

⑱ VD 5V/div. 50ms/div.
Normal mode: No disc

29

⑲ CH1: R OUT　1V/div.　　0.2ms/div.
⑳ CH2: L OUT　1V/div.
　　Normal mode: Play (1kHz 0dB)

REFO →

REFO →

⑥ CH1: FEY　　0.2V/div.　　1ms/div.
③ CH2: FIN　　0.5V/div.
　　Normal mode: During AGC

REFO →

REFO →

⑧ CH1: TEY　0.2V/div.　　1ms/div.
⑨ CH2: TIN　0.5V/div.
　　Normal mode: During AGC

REFO →

REFO →

① CH1: RFO　　1V/div.　　0.5ms/div.
㉑ CH2: HOLD　5V/div.
　　Normal mode: The defect part passes
　　　　　　　　800μm

GND →

③ CH1: FIN　　1V/div.　　0.5ms/div.
㉑ CH2: HOLD　5V/div.
　　Normal mode: The defect part passes
　　　　　　　　800μm

GND →

3.3 FM/AM TUNER UNIT

FM/AM TUNER UNIT

FM FRONT END

FM SIGNAL

AM SIGNAL

AM OSC

FM OSC

IC1 PA4023B

AM RF

FM IF(10.7MHz)
AM 1ST IF(10.71MHz)

UNIT

13 Vcc
12 SEEK
11 AF GND
10 AM ST
9 FM SL
8 Rch
7 Lch
6 FM SD
5 GATE DRIVE
4 MONO/REQ
3 ST
2 COMP
1 AF GND

FM/AM

FM MPX

R237 10K
R047
R246
C246
R244 10K   R243 12K
R240 3R3K
AM DET
R241 2K
R239 100K
C242 R47/50
R238 100K
C243 R33/50
R239 100K
CF232
C244 R047
AM 2ND IF (450KHz)

C241 R1
C245
R012
AM AF OUT

R247 12K

PNS

C159 22/6R3   3.9V 25 LPF   LOOP F 24 3.9V   R160 2R2K
                3.9V 26 LPF   LOOP F 23 3.9V   C158 R47   C157 3R3/50
0V(Auto)2.0V(IFC) 27 REQ/MO   STIND 22 VDD(MONO)
VDD(MONO)   0V(ST)   Q154 DTC124EU
R161 56K   4.0V 28 AMIN   VCO 21 4.0V   X151 CSS1365
C161 R1   2.0V 29 DDSSENS   C170 10P   X151:918.5Hz
               0V(65dBf)   Rch 20
C160 R1   1.7V 30 ARCr   Lch 19
R162 1M   5.1V(65dBf)
C162 3R3/50   2.0V 31 ENVr   TP5ENV AFGND 18 0V
               0V(65dBf)
C163 R001 R163 2R2K 2.2V 32 ENVSENS MUTEadj 17 1.6V R154 100K R157 20K
               6.2V(65dBf)
Q165   1.2V 33 PNSSENS SDadj 16 1.7V   R156 24K
2SC2412KLN   R103 33K TP7PNS 0V(65dBf)
R104 330K TP6 0.8V 34 AGC   HCCadj 15 1.9V   R155 27K
               0V(65dBf)
C104 2R2/50   3.2V 35 AGCgain ARCadj 14 1.8V   VR154 150K(B) CCP1213
C105 R01 R105 68K   MPdet 13 1.9V   C154 R1
C106 150P   2.5V 36 HPF   3.8V(65dBf)
C107 R01 R107 2R2K 2.3V 37 SMPNS ENVHCC 12 0V
C50 33/10   4.2V(65dBf)
               8.4V 38 Vcc   SUBB 11 3.6V   C153 3R3/50
               -39 IFC   MUTEr 10 2.8V   C152 R1
C57 4700P   5.2V(65dBf)
               0V 40 SD   HOLD C 9   C103 6800P
R56 82K   PNSIN 8 R101 2R7K C102 1000P
C56 R1   0V 41 200kSD   3.9V   R102 6R8K
C55 R022   0.8V 42 SDr   COMP 7 3.9V   C101 10/10
C54 47P R55   1.1V 43 SL   HCC 6 4.0V   C151 4700P
               4.9V(65dBf)
C51 R022   8.4V 44 Vcc   MUTE 5 3.9V   R152 39K
L51   C59 R01   AFC 4 4.0V   R151 2R2K R62 39K TP3 CENTER METER
               2.2V 45 IFLPF   Vref 3 4.0V   R61 3R9K   C63 R15/50 TP4 CENTER METER
C52   2.2V 46 IFVref   Q_IN 2 3.9V   C62 R01
R52 R51 270   2.2V 47 IFIN   IFOUT 1 3.9V   T51
CF53 56 FM   C61 27P

IC2 PA4024A

FM IF

AM
AM SL 31   AMOUT 30   AMVref 29   AMIFOUT 28   AM SE 27   AGC2IN 26   AMIFIN 25   AMVcc 24
0V 4.4V(74dBf) 3.5V/4.3V(74dBf) 5.5V 2.7V 7.8V 3.4V/4.2V(74dBf) 2.6V

IFMIX IN 18MIX2 19IFOUT2 20 IF GND 21 X'TAL 22 X'TAL 23MIX2OUT 24 AMVcc
2.8V 4.8V 0V 4.9V 5.5V 4.7V 8.4V

C230 R01

C232 15P X231 CSS1111 10.26MHz C233 R1 C234 33/10
C231 33P

B

33

3.4 KEYBOARD PCB

C KEYBOARD PCB

IC1902
PD6237C

IC1903
SED1540F0A

IC1904
SED1526F0A

LCD1901
CAW1471 (DEH-P945R/EW)
CAW1493 (DEX-P99R/EW)

EL1901
CEL1580

C

3.5 DSP UNIT(GUIDE PAGE)

F-a

F-b

:ANALOG AUDIO INPUT   :DIGITAL AUDIO

:FRONT AUDIO OUTPUT (Front/Miid)   :FRONT AUDIO DIGITAL
:REAR AUDIO OUTPUT (Rear/Hi)   :REAR AUDIO DIGITAL
:SUBWOOFER AUDIO OUTPUT   :SUBWOOFER AUDIO DIGITAL
(Sub.w/Low)

F DSP UNIT

(DEH-P945R/EW)
M.CD:+11.1dBs
FM100%:+4.55dBs
AM30%:-5.45dBs

(DEX-P99R/EW)
M.CD:+6.5dBs
FM100%:+4.55dBs
AM30%:-5.45dBs

M.CD:+1.5dBs(DEH-P945R/EW)
M.CD:+2.1dBs(DEX-P99R/EW)
FM100%:-0.45dBs
AM30%:-10.45dBs

IC3102
TC9331F

DSP IC

IC3103
(M5M51016BTP)
S-RAM
GGC1325

IC3001
PD5445C
DSP μCOM

F-a
F-b

F-a

DEH-P945R,DEX-P99R

F-a F-b

A

A ◁ :DIGITAL AUDIO

F ◁ :FRONT AUDIO DIGITAL
R ◁ :REAR AUDIO DIGITAL
SW ◁ :SUBWOOFER AUDIO DIGITAL

B

A ◁ :ANALOG AUDIO INPUT

F ◁ :FRONT AUDIO OUTPUT (Front/Mid)
R ◁ :REAR AUDIO OUTPUT (Rear/Hi)
SW ◁ :SUBWOOFER AUDIO OUTPUT
(Sub.w/Low)

F DSP UNIT

C

D

F-a F-b

A

B

C

D

PM017AM
E-VOL

IC3103
S-RAM
GGC1325
(M5M51016BTP)

IC3102
TC9331F
DSP IC

AM30%:-10.45dBs

3.6 ASL UNIT

L ASL UNIT

3.7 MICROPHONE JACK UNIT

M MICROPHONE JACK UNIT

CN4601

CN4602

A CN222

1 AEQ
2 MICS
3 GND
4 DLED
5 VDD

D4601
BR4361F

M 43

3.8 HIGH OUT UNIT (DEX-P99R/EW)

H HIGH OUT PCB

CN4151

CN4153

FL 1 FLIN

3 8 C4153 R4157 PFL FL
10/50 68

R4153 R4155 AGND 10K 15K C4157 82P

1 FRONT PREOUT

R4161 2R2K R4159 22K Q4151 IMX9 2

FR 2 FRIN 5 7 C4154 R4158 PFR FR
6 4 10/50 68 3

IC4151 NJM4580M

R4154 R4156 10K 15K C4158 82P R4162 2R2K R4160 22K 4

RL 3 RLIN 3 8 C4253 R4257 PRL RL
2 10/50 68 5

R4253 R4255 10K 16K C4257 82P R4261 2R2K R4259 22K 6

IC4251 NJM4580M Q4251 IMX9 REAR PREOUT

RR 4 RRIN 5 7 C4254 R4258 PRR RR
6 4 10/50 68 7

R4254 R4256 10K 16K C4258 82P R4262 2R2K R4260 22K 8

SWL 5 SWL 3 8 C4353 R4357 SUBWL L
2 10/50 68 9

R4353 R4355 10K 15K C4357 82P R4361 2R2K R4359 22K 10

R4163 10K IC4351 NJM4580M Q4351 IMX9 SUB.W OUT

SWR 6 SWR 5 7 C4354 R4358 SUBWR R
GND 7 6 4 10/50 68 11

R4354 R4356 10K 15K C4358 82P R4362 2R2K R4360 22K 12

SYS+B 3 8.4V SYSB C4152 470P C4151 10/50
MUTE 2 MUT
-8.0V 1 M8VI PGND

CN252 CN4152

M.CD:+13.72dBs
FM100%:+11.77dBs
AM30%:+1.77dBs

A CN231

A CN252

G D/D CONVERTER UNIT

-8.0V 4 M8VO 1 CN4003 REG GND
REG.GND 3 REGGND 2 CN4002 PW C.
SYSPW 2 PWC 14.4V 3 CN4001 VIN
B.UP 1 BACKUP 4 CN4004 -8.0
CN4051

A CN251

HIGH OUT UNIT
Consists of
High Out PCB
D/D Converter PCB

E D/D CONVERTER PCB

E **H**

DEH-P945R,DEX-P99R

3.9 D/D CONVERTER UNIT (DEX-P99R/EW)

G D/D CONVERTER UNIT

DEH-P945R,DEX-P99R
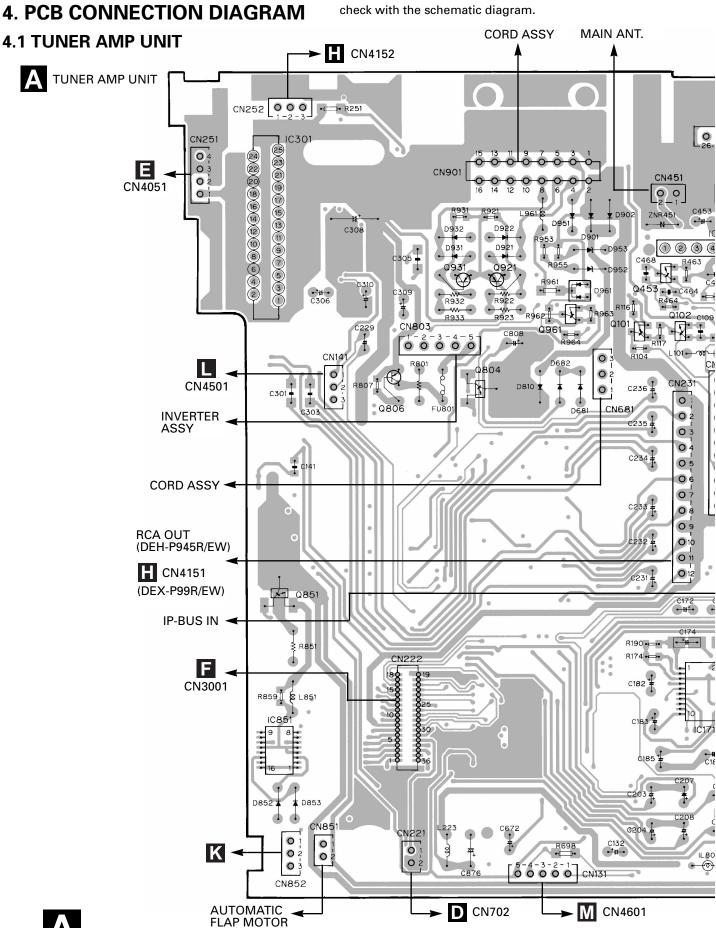
NOTE FOR PCB DIAGRAMS

1. The parts mounted on this PCB include all necessary parts for several destination.
   For further information for respective destinations, be sure to check with the schematic diagram.

4. PCB CONNECTION DIAGRAM

4.1 TUNER AMP UNIT

A TUNER AMP UNIT

2. Viewpoint of PCB diagrams

Connector　Capacitor

SIDE A

P.C.Board　Chip Part

SIDE B

SIDE A

A

B →

ADJ | IC, Q

Y401

26-25-24-23-22-21-20-19-18-17-16-15-14　　13-12-11-10- 9 - 8 - 7 - 6 - 5 - 4 - 3 - 2 - 1

CN452　L456　C405　L401　C413　R431　C410　C154　C153　R402 R401　S601

C456　　　　　　　　22　12　　　　　　　　　　　D401

2-1　R456　　　　　　　23　11

ZNR452　R454　　　　　　　C426　C419　　R640

53　R457　　　　　　C425

IC451　R453　　C407　IC401　　　　　　　R942

4 5 6 7 8 9　　C417 33　　34　　44　1

Q452　　　　　　　　C942　①

C467　C466　　　　　　C944　②

R458　C501　　　X401　　　③

R462　　　　　　④

109　C502　L501　C562　C945 C943　⑤

L458　R461　52 R510　　　⑥

R118　64　　51　　⑦

C108 C107　　　R509　　VR551　⑧

CN101　R512　　R518　C946　⑨

9　C106　R511　R519　R566　⑩

8　　　　C582 R261　⑪

7　C105　IC501　32　17　L581　⑫ IC941

6　R501　　　　D261

5　C104　19　　33　C872 C871

4　　20　　32　C581 R872 Q871

3　C103　R506　　　IC871

2　C971　X501　C604　① ② ③

1　　X601　C914

IC102　L602 C603

IC971　R609

1　　30　　R636

3　31　100　L601

R229 C620　　　　L603

R831　IC601　Q911

C171　C605

CN671　　　　50　　D912

1　C173　　　　81

5　TH651　51　80　C609

3　R189　C652 60 R629 41 C911

20　7　C651 61 R628 40

10　L651 C653　　C659

15　17　　R662

20　IC651　　C911

23　X651　　21

25　R665 80 1　20

C184 28　R663

R678　C654

C201 30　C656 C803 R814 C993

C202　　R805 L801 Q807

CN802　D911　　C806

L801 1　SP601　R820

2　CN804 2

3　　1　CN801

D CN701 ←　12 10 8 6 4 2　D991 Q992

INVERTER　11 9 7 5 3 1　C811 C810 R991

ASSY　　　C IC301 IC401

CN1901

IC451 Q452

Q931 Q921 Q453

Q961 IC941

Q101 Q102

VR551

Q806 Q804 IC501

IC102 IC581 Q871

IC871

IC971

Q851 IC601 Q911

IC171

IC851 IC651

Q807

Q992

A

A TUNER AMP UNIT

SIDE B

IC, Q

A

Q401 Q252 Q251

Q151 Q152

Q402 Q253

Q302
Q154
Q153 Q301
Q403

Q454 Q952
Q451
Q951
Q922 Q932
IC101

B

Q551 Q812
IC551

Q872 Q803
Q805 Q802
Q233
IC552 Q681
Q682
Q232 IC681 Q683
Q971 Q261 Q684

Q231 Q685

C

Q601

Q852
Q913
Q853

Q651

IC671
Q171

Q172 Q132

Q808 Q602 Q131

Q811 Q810

D

Q991

A   49

4.2 FM/AM TUNER UNIT

SIDE A

SIDE B

FM/AM TUNER UNIT

B

B

4.3 CD MECHANISM MODULE

SIDE A

A

IC,Q

D CONTROL UNIT

SIDE B

D CONTROL UNIT

IC,Q

IC702
IC301

IC101

PICKUP UNIT

C302
R303
R304
28 22 30 21 15
IC301
IC702
3
R302
1 2 4 5
5 7 29 8 14
E
R305 R308
REFO R307
R306
C110
C106 IC101 R106
C117
C118
R107
R714
C116 C121
R120 C201
C203
R115 R121
R606
R701
CN101
C127
C119 C126
CN701
F
M3
SPINDLE
MOTOR
CN802
X201
R901
R201 C202
R715 R705 R706
R707
R708
A
CN671
C602
R202
CN801
I
C901 CN702
C901
A CN221

D 53

DEH-P945R,DEX-P99R

A

P2

P1

B

P3

C

PHOTO FPC UNIT

D

4.4 KEYBOARD UNIT

C KEYBOARD UNIT

A

IC   IC1901

VOL+

C1904

S1911   D1915

VOL−

D1919

B   S1915

IC1901

1   4

2   3

C   1   2

S1914   S1902   S1904   S1908

D1920   D1918   D1907   D1912

D   S1916   D

C KEYBOARD UNIT

IC, Q   Q1901   IC1905

ADJ   VR1901

C

C1915 C1914 C1913 C1912

R1908   R1927   128   103   R1936   R1937

R1968   R1913   R1928   R1935   R1938

R1912   R1918   R1930   C1916   102   R1939   5

R1922   R1929   R1950   R1958

R1914   R1955

C1918   R1941

EL1901   2   C1919   IC1905   R1942

12 11 10 9 8 7 6 5 4 3 2 1   C1920   R1943
1   R1944
R1945

Q1901   CN1901   65   80

R1915   R1902   R1964   38   39   64

R1954   R1903   R1901   R1910   VR1901   L1903   L1901

R1909   R1902   D1901   L1905   C1917

R1906   R1911   R1966   R1959   C1936   S1901

R1967   C1935   R1951

D1903   D1902   C1934   C1907   X

A CN801

DEH-P945R,DEX-P99R

SIDE A

A

EJECT
S1907
D1911
LCD1901
D1910 C1903

SOURCE
S1903
D1905
B
D1906

5   6   A   B
S1909   S1913   S1910   S1906

D1913   D1917   D1914 D1909

SIDE B

IC1902   Q1902   IC1904   IC1903   Q1903

VR1902

C

1937   50   31   C1906   102   65   C1929
1938 51   30   103   64   R1956
R1958   C1928   R1917   R1919
IC1902   R1932   IC1904   R1920   R1957
R1931   C1927   R1921   R1923
943   R1931   C1926   IC1903   C1905
944   128   C1926
945   L1904   Q1903
80   R1924   D1904
81   100   C1922   C1921 C1924   R1916 R1905
X1901   C1923   VR1902   R1970   R1904
R1946   R1952   C1908
R1947 R1948   R1907   R1940 R1962   R1961   R1960
Q1902   R1963   R1965   R1953   L1902
C1901   C1909   C1910 C1911

C

57

DEH-P945R,DEX-P99R

4.5 DSP UNIT

SIDE A

F DSP UNIT

IC

IC3101

IC3103

IC3141

IC3142

IC3301

SIDE B

F DSP UNIT

IC

IC3102

IC3201

IC3001

R3102 R3113
C3104 X3101
50 26
51 25
C3105
C3102 C3201
12 1
C3109 IC3201
IC3102 13 24
L3201
C3110 C3203
C3111 C3112 C3206 C3205 C3108
R3115 75 C3119
76 100 R3131 C3161 C3162
R3114 R3151
R3018 R3033 L3102 C3113 R3153 R3155
R3012 L3102 C3163
R3005 21 C3159 C3160 R3152 R3154 C3164
40 R3037 R3156
41 20 R3003 C3151
R3013 R3004
R3036 R3008 R3002 L3151
L3002 L3153
IC3001 25 L3152
R3011 10 L3154
R3132 C3152
R3014 R3010 30 5
L3141 L3004
60 1 36 1
61 80 L3003
R3020 R3024 R3028 R3001 R3015 C3145 CN3001

A CN222

F
59

4.6 ASL UNIT

SIDE A

A

L ASL UNIT

IC,Q

C4507 C4508
C4509   C4501
                        CN4501
                        1 2 3   A CN141
                        C4513
C4510

VR4501

MIC4501
1 2

C4505
C4506   VR4501
C4504

C4502
        C4503
B   Q4501   Q4501

SIDE B

L ASL UNIT

IC,Q

IC4502

D4503
R4515   IC4502
R4517   5 4   R4512
            8 1
                        R4514
                        R4513 C4511 R4511
C   D4501 C4512 R4510

IC4501

R4506
            R4507
            IC4501
R4508   1 8
                        D4502
                        R4509 R4502 R4501
R4504
        R4505   R4503

D

4.7 FLAP SENSE PCB, MICROPHONE JACK UNIT

K FLAP SENSE PCB

S952
OPEN

CN951
CLOSE

CLOSE
S951

OPEN
S952

A CN852

SIDE A

SIDE B

M MICROPHONE JACK UNIT

M MICROPHONE JACK UNIT

CN4602

D4601

CN4601
1 2 3 4 5

A CN131

K **M** 61

4.8 D/D CONVERTER UNIT, D/D CONVERTER PCB (DEX-P99R/EW)

SIDE A

G D/D CONVERTER UNIT

IC,Q

IC4001

Q4001

Q4002

Q4003

C4001 C4003 C4008
L4001
R4004 R4001
C4004 Q4001 D4001 L4003
R4002
L4002
C4006
IC4001

SIDE B

E 3

IC,Q

Q4004

Q4005

G D/D CONVERTER UNIT

E 4 CN4004 R4009 C4002
C4009 R4010 Q4004
R4013 R4019 CN4001
C4010 R4012 R4014 R4015 R4011
R4005 C4014 R4018 IC4015 R4007 C4013
R4006 R4017 C4011
C4005 R4008 C4012
C4007 R4003 R4016
Q4005

CN4002 CN4003

E 2 **E** 1

E D/D CONVERTER PCB

SIDE A

G CN4004

IC4051

4

2 **G** CN4002

3 1 **G** CN4003

CN4051
L1-2-3-4

G CN4001 **A** CN251

E D/D CONVERTER PCB

SIDE B

E **G**

4.9 HIGH OUT UNIT (DEX-P99R/EW)

SIDE A

IC,Q

H HIGH OUT UNIT

IC4351

RCA OUT

A CN252   A CN231

SIDE B

H HIGH OUT UNIT

IC,Q

Q4351
IC4251

Q4251
IC4151

Q4151

H 63
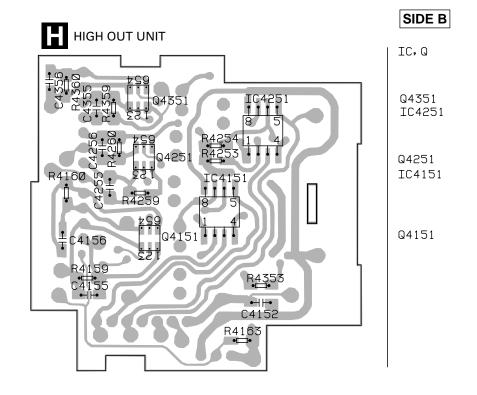
5. ELECTRICAL PARTS LIST

NOTES:

● Parts whose parts numbers are omitted are subject to being not supplied.

● The part numbers shown below indicate chip components.

    Chip Resistor

       RS1/○S○○○J,RS1/○○S○○○J

    Chip Capacitor (except for CQS.....)

       CKS....., CCS....., CSZS.....

=====Circuit Symbol and No.===		Part Name	Part No.
B Unit Number : CWE1416			
Unit Name : FM/AM Tuner Unit			
MISCELLANEOUS			
IC	1	IC	PA4023B
IC	2	IC	PA4024A
Q	1	Transistor	2SC2412K
Q	2	Transistor	DTC124EU
Q	3	FET	3SK263
Q	31	Transistor	2SC2412K
Q	154	Transistor	DTC124EU
Q	165	Transistor	2SC2412K
Q	201	FET	2SK932
Q	202	Transistor	2SC2412K
Q	203	Transistor	DTC124EU
D	4	Diode	1SV250
D	5	Diode	KV1410-F1
D	7	Diode	KV1410-F1
D	8	Diode	KV1410-F1
D	201	Diode	MA157
D	202	Diode	MA157
D	231	Diode	SVC253
L	2	Coil	CTC1108
L	3	Inductor	LCTB2R2K2125
L	4	Coil	CTC1108
L	5	Coil	CTC1107
L	6	Inductor	LCTBR15K1608
L	51	Ferri-Inductor	LAU150K
L	201	Ferri-Inductor	LAU4R7K
L	202	Ferri-Inductor	LAU330K
L	203	Inductor	CTF1287
L	208	Inductor	LAU121K
L	231	Inductor	LCTA3R3J3225
T	31	Coil	CTE1116
T	51	Coil	CTC1136
TC	1		CCL1046
CF	51	Ceramic Filter	CTF1292
CF	52	Ceramic Filter	CTF1292
CF	53	Ceramic Filter	CTF1292
CF	232	Ceramic Filter	CTF1348
X	151	Resonator 918.5Hz	CSS1365
X	231	Crystal Resonator 10.26MHz	CSS1111
VR	154	Semi-fixed 150kΩ(B)	CCP1213
AR	1	(DSP-201M-A11F)	GGC1326
RESISTORS			
R	1		RS1/16S0R0J
R	4		RS1/16S154J
R	5		RS1/16S391J
R	6		RS1/16S223J
R	7		RS1/16S123J
R	8		RS1/16S332J
R	9		RS1/16S473J
R	10		RS1/16S223J
R	11		RS1/16S124J
R	13		RS1/16S563J

=====Circuit Symbol and No.===		Part Name	Part No.
R	15		RS1/16S271J
R	16		RS1/16S104J
R	17		RS1/16S332J
R	18		RS1/16S332J
R	31		RS1/16S470J
R	32		RS1/16S822J
R	33		RS1/16S822J
R	34		RS1/16S331J
R	35		RS1/16S331J
R	51		RS1/16S271J
R	52		RS1/16S560J
R	55		RS1/16S102J
R	56		RS1/16S823J
R	61		RS1/16S392J
R	62		RS1/16S393J
R	101		RS1/16S272J
R	102		RS1/16S682J
R	103		RS1/16S333J
R	104		RS1/16S334J
R	105		RS1/16S683J
R	107		RS1/16S222J
R	151		RS1/16S222J
R	152		RS1/16S393J
R	154		RS1/16S104J
R	155		RS1/16S273J
R	156		RS1/16S243J
R	157		RS1/16S203J
R	160		RS1/16S222J
R	161		RS1/16S563J
R	162		RS1/16S105J
R	163		RS1/16S222J
R	202		RS1/16S223J
R	203		RS1/16S225J
R	204		RS1/16S103J
R	206		RS1/16S220J
R	207		RS1/16S101J
R	208		RS1/16S102J
R	209		RS1/16S471J
R	214		RS1/16S822J
R	215		RS1/16S822J
R	217		RS1/16S102J
R	231		RS1/16S272J
R	232		RS1/16S473J
R	237		RS1/16S103J
R	238		RS1/16S104J
R	239		RS1/16S104J
R	240		RS1/16S332J
R	241		RS1/16S202J
R	243		RS1/16S123J
R	244		RS1/16S103J
R	247		RS1/16S123J
CAPACITORS			
C	1		CCSQCH6R0D50
C	2		CCSRCK2R0C50
C	4		CCSRCH820J50
C	6		CCSRCH820J50
C	8		CKSRYB103K25

=====Circuit Symbol and No.===Part Name	Part No.
C 9	CKSQYB104K16
C 10	CCSRCKR50C50
C 11	CEJA1R0M50
C 13	CKSRYB222K50
C 14	CCSRCH220J50
C 16	CCSRCH8R0D50
C 17	CKSRYB222K50
C 18	CKSRYB103K25
C 19	CKSRYB222K50
C 20	CKSRYB222K50
C 21	CEJA100M16
C 22	CCSRTH9R0D50
C 23	CCSRTH120J50
C 24	CCSRCH471J50
C 25	CKSRYB103K25
C 31	CKSRYB103K25
C 32	CKSQYB472K50
C 33	CCSRCH5R0C50
C 34	CKSQYB104K16
C 36	CCSRRH201J50
C 51	CKSRYB223K25
C 52	CKSRYB103K25
C 54	CCSRCH470J50
C 55	CKSQYB223K25
C 56	CKSQYB104K16
C 57	CKSRYB472K50
C 58	CEJA330M10
C 59	CKSRYB103K25
C 61	CCSRCH270J50
C 62	CKSRYB103K25
C 63	CEJAR15M50
C 101	CEJANP100M10
C 102	CKSRYB182K50
C 103	CKSRYB682K25
C 104	CEJA2R2M50
C 105	CKSRYB103K25
C 106	CCSRCH151J50
C 107	CKSRYB103K25
C 151	CKSRYB472K50
C 152	CKSQYB104K16
C 153	CEJA3R3M50
C 154	CKSQYB104K16
C 157	CEJA3R3M50
C 158	CKSYB474K16
C 159	CEJA220M6R3
C 160	CKSQYB104K16
C 161	CKSQYB104K16
C 162	CEJA3R3M50
C 163	CKSRYB102K50
C 170	CCSRCH100D50
C 201	CCSRCH471J50
C 202	CCSRCH100D50
C 203	CKSRYB332K50
C 204	CKSQYB473K16
C 205	CKSQYB473K16
C 206	CKSQYB104K16
C 207	CCSRCH560J50
C 209	CKSQYB104K16
C 211	CCSRCH101J50
C 212	CEJA470M6R3
C 213	CKSRYB103K25
C 216	CCSRCH101J50
C 217	CEJA1R5M50
C 219	CCSRCH471J50
C 220	CKSRYB103K25
C 230	CKSRYB103K25
C 231	CCSRCH330J50
C 232	CCSRCH150J50
C 233	CKSQYB104K16
C 234	CEJA330M10

=====Circuit Symbol and No.===Part Name	Part No.
C 235	CKSRYB332K50
C 236	CKSQYB473K16
C 237	CCSRCH120J50
C 239	CKSRYB472K50
C 240	CEJAR47M50
C 241	CKSQYB104K16
C 242	CEJAR47M50
C 243	CEJAR33M50
C 244	CKSQYB473K16
C 245	CKSRYB123K25
C 246	CKSQYB473K16
C 250	CCSRCH471J50

D Unit Number : CWX2166
Unit Name : Control Unit

MISCELLANEOUS

IC	101	IC	UPC2572GS
IC	201	IC	UPD63702AGF
IC	301	IC	BA6797FM
IC	502	IC	LC89170M
IC	702	IC	BA05SFP
IC	801	IC	LB1930M
Q	101	Transistor	2SD1664
Q	102	Transistor	UMD2N
D	701	Diode	1SR154-400

RESISTORS

R	101	RS1/8S100J
R	102	RS1/8S120J
R	104	RS1/16S822J
R	105	RS1/16S682J
R	106	RS1/16S183J
R	107	RS1/16S822J
R	108	RS1/16S333J
R	109	RS1/16S683J
R	110	RS1/16S134J
R	111	RS1/16S273J
R	112	RS1/16S222J
R	113	RS1/16S103J
R	114	RS1/16S103J
R	115	RS1/16S102J
R	116	RS1/16S163J
R	117	RS1/16S163J
R	120	RS1/16S101J
R	121	RS1/16S101J
R	125	RS1/16S102J
R	201	RS1/16S104J
R	202	RS1/16S473J
R	206	RS1/16S101J
R	207	RS1/16S0R0J
R	208	RS1/16S0R0J
R	301	RS1/16S303J
R	302	RS1/16S203J
R	303	RS1/16S303J
R	304	RS1/16S203J
R	305	RS1/16S103J
R	306	RS1/16S203J
R	307	RS1/16S103J
R	308	RS1/16S103J
R	310	RS1/16S102J
R	311	RS1/16S102J
R	501	RS1/16S0R0J
R	503	RS1/16S0R0J
R	701	RS1/16S221J
R	702	RS1/16S221J
R	703	RS1/16S221J
R	705	RS1/16S102J

DEH-P945R,DEX-P99R

=====Circuit Symbol and No.===Part Name		Part No.
R	706	RS1/16S681J
R	707	RS1/16S681J
R	708	RS1/16S681J
R	709	RS1/16S681J
R	711	RS1/16S471J
R	712	RS1/16S471J
R	713	RS1/16S471J
R	714	RS1/16S102J
R	717	RS1/16S0R0J
R	718	RS1/16S102J
R	901	RS1/16S302J

CAPACITORS

C	101	CEVL101M6R3
C	102	CKSQYB104K16
C	103	CEVL470M6R3
C	104	CKSQYB334K16
C	105	CCSRCH330J50
C	106	CKSRYB103K25
C	107	CEVL4R7M35
C	108	CKSRYB273K25
C	109	CCSRCH101J50
C	110	CKSQYB104K16
C	111	CKSRYB332K50
C	112	CKSRYB473K16
C	113	CKSRYB103K25
C	114	CKSRYB391K50
C	115	CCSRCH121J50
C	116	CKSRYB682K25
C	117	CKSRYB333K16
C	118	CKSQYB334K16
C	119	CKSQYB334K16
C	120	CKSQYB334K16
C	121	CKSQYB334K16
C	122	CKSQYB104K16
C	123	CKSRYB472K50
C	124	CKSQYB104K16
C	125	CCSRCH6R0D50
C	126	CKSRYB153K25
C	127	CCSRCH102J25
C	201	CKSQYB334K16
C	202	CKSQYB104K16
C	203	CKSQYB104K16
C	204	CKSRYB471K50
C	303	CEVL470M16
C	305	CKSRYB103K25
C	306	CKSRYB103K25
C	309	CKSYB475K10
C	601	CEV101M6R3
C	602	CKSQYB104K16
C	701	CEV100M25
C	702	CKSQYB334K16
C	703	22µF/6.3V	CCH1300
C	704	CEVL101M6R3
C	901	CKSRYB221K50

A Unit Number : CWM5696(DEH-P945R/EW)
Unit Name : Tuner Amp Unit

MISCELLANEOUS

IC	101	IC	CA0008AM
IC	102	IC	TA2050S
IC	171	IC	BA3131FS
IC	301	IC	TDA7386
IC	401	IC	PM2007A
IC	551	IC	PMW001B
IC	552	IC	TA75S393F
IC	601	IC	PD4905A
IC	651	IC	PD4931A
IC	671	IC	PD0236AM

=====Circuit Symbol and No.===Part Name		Part No.
IC	851	IC	BA6288FS
IC	871	IC	NJM78M05FA
IC	941	IC	PA2024A
IC	971	IC	S-80730ANDT
Q	101	Transistor	2SA1162
Q	102	Transistor	UN2212
Q	131	Transistor	2SC2712
Q	132	Transistor	IMD2A
Q	151	Transistor	2SD1757K
Q	152	Transistor	2SD1757K
Q	153	Transistor	IMH3A
Q	154	Transistor	UN2111
Q	171	Transistor	DTC314TK
Q	172	Transistor	DTC314TK
Q	231	Transistor	FMG13
Q	232	Transistor	FMG13
Q	233	Transistor	FMG13
Q	261	Transistor	IMD2A
Q	301	Transistor	UN2212
Q	302	Transistor	UN2212
Q	401	Transistor	2SC2712
Q	402	Transistor	2SC2712
Q	403	Transistor	IMD2A
Q	551	Transistor	DTC143TK
Q	601	Transistor	UN2111
Q	602	Transistor	UN2211
Q	651	Transistor	UN2112
Q	681	Transistor	2SA1162
Q	682	Transistor	UN2212
Q	683	Transistor	2SC2712
Q	684	Transistor	2SC2712
Q	685	Transistor	2SC2712
Q	802	Transistor	2SC2712
Q	803	Transistor	UN2211
Q	804	Transistor	2SD1760F5
Q	805	Transistor	UN2111
Q	806	Transistor	2SB1238
Q	807	Transistor	2SB1238
Q	808	Transistor	DTC143EK
Q	810	Transistor	2SC2712
Q	811	Transistor	2SC2712
Q	812	Transistor	DTA144EK
Q	851	Transistor	2SD1760F5
Q	852	Transistor	UN2111
Q	853	Transistor	UN2212
Q	871	Transistor	2SB1238
Q	872	Transistor	DTC123EK
Q	911	Transistor	2SD1760F5
Q	913	Transistor	IMD2A
Q	921	Transistor	2SB1243
Q	922	Transistor	UN2212
Q	931	Transistor	2SB1243
Q	932	Transistor	UN2212
Q	951	Transistor	UN2211
Q	952	Transistor	IMX1
Q	961	Transistor	2SA1162
Q	971	Transistor	2SC2712
Q	991	Transistor	IMD2A
Q	992	Transistor	2SD2396
D	131	Diode	MA3039(L)
D	231	Diode	MA152WA
D	232	Diode	MA152WA
D	233	Diode	MA152WA
D	261	Diode	MA152WK
D	262	Diode	MA152WK
D	263	Diode	MA152WK
D	401	Diode	MA152WK
D	402	Diode	MA152WK
D	551	Diode	MA3047(M)
D	803	Diode	MA3062(M)

=====Circuit Symbol and No.===Part Name			Part No.	=====Circuit Symbol and No.===Part Name			Part No.
---	------	---------------------------------------	-----------------------	---	------	--	-----------------------
D	804	Diode	DA204K	R	116		RS1/10S332J
D	805	Diode	DA204K	R	117		RS1/10S562J
D	806	Diode	DA204K	R	118		RS1/10S472J
D	807	Diode	DA204K	R	131		RS1/10S103J
D	808	Diode	MA3062(M)	R	132		RS1/10S223J
D	809	Diode	DA204K	R	133		RS1/10S473J
D	810	Diode	ERA15-02VH	R	134		RS1/10S104J
D	851	Diode	MA3075(H)	R	135		RS1/10S222J
D	852	Diode	1SS133	R	136		RS1/10S561J
D	853	Diode	1SS133	R	151		RS1/10S272J
D	871	Diode	MA152WK	R	152		RS1/10S272J
D	901	Diode	ERA15-02VH	R	155		RS1/10S222J
D	902	Diode	ERA15-02VH	R	156		RS1/10S222J
D	911	Diode	HZS6L(B1)	R	157		RS1/10S224J
D	912	Diode	ERA15-02VH	R	158		RS1/10S224J
D	921	Diode	ERA15-02VH	R	159		RS1/10S223J
D	922	Diode	ERA15-02VH	R	160		RS1/10S223J
D	931	Diode	ERA15-02VH	R	171		RS1/10S393J
D	932	Diode	ERA15-02VH	R	172		RS1/10S393J
D	951	Diode	ERA15-02VH	R	173		RS1/10S752J
D	952	Diode	HZS7L(C3)	R	174		RS1/10S752J
D	953	Diode	HZS7L(A1)	R	175		RS1/10S222J
D	961	Diode	MA152WK	R	176		RS1/10S222J
D	971	Diode	MA152WK	R	177		RS1/10S473J
D	991	Diode	HZS9L(B1)	R	178		RS1/10S473J
L	101	Inductor	LAU3R3K	R	179		RS1/10S513J
L	141	Inductor	CTF1420	R	180		RS1/10S513J
L	221	Inductor	CTF1295	R	181		RS1/10S563J
L	222	Inductor	LCTB2R2K2125	R	182		RS1/10S563J
L	223	Ferri-Inductor	LAU1R0M	R	184		RS1/10S103J
L	401	Ferri-Inductor	LAU2R2K	R	185		RS1/10S224J
L	403	Inductor	LAU2R2K	R	186		RS1/10S102J
L	551	Inductor	CTF1295	R	187		RS1/10S102J
L	601	High Loss Inductor	CTF1410	R	189		RS1/10S104J
L	602	High Loss Inductor	CTF1410	R	190		RS1/10S104J
L	603	High Loss Inductor	CTF1410	R	201		RS1/10S472J
L	651	High Loss Inductor	CTF1410	R	202		RS1/10S472J
L	652	Inductor	CTF1295	R	203		RS1/10S472J
L	671	Inductor	CTF1295	R	204		RS1/10S472J
L	801	High Loss Inductor	CTF1410	R	205		RS1/10S223J
L	961	Ferri-Inductor	LAU2R2K	R	206		RS1/10S223J
TH	651	Thermistor	CCX1037	R	207		RS1/10S331J
X	401	Crystal Resonator 7.200MHz	CSS1379	R	208		RS1/10S331J
X	501	Crystal Resonator 4.332MHz	CSS1056	R	209		RS1/10S331J
X	601	Resonator 12.58291MHz	CSS1402	R	210		RS1/10S331J
X	651	Resonator 4.19MHz	CSS1436	R	227	(RN1/10SE4702D)	GGC1316
S	601	Slide Switch(PRO/STD)	CSH1048	R	228	(RN1/10SE4702D)	GGC1316
IL	801	Lamp 14V40mA	CEL1359	R	229		RS1/16S102J
VR	551	Semi-fixed 22kΩ(B)	CCP1129	R	231		RS1/10S821J
		DSP Unit	CWX2214	R	232		RS1/10S821J
		FM/AM Tuner Unit	CWE1416	R	233		RS1/10S821J
BZ	601	Buzzer	CPV1012	R	234		RS1/10S821J
FU	801	IC Protector 0.4A	ICP-N10	R	235		RS1/10S821J
				R	236		RS1/10S821J
RESISTORS				R	237		RS1/10S223J
R	101		RS1/10S620J	R	238		RS1/10S223J
R	102		RS1/10S101J	R	239		RS1/10S223J
R	103		RS1/10S101J	R	240		RS1/10S223J
R	104		RS1/10S222J	R	241		RS1/10S223J
R	105		RS1/10S103J	R	242		RS1/10S223J
R	106		RS1/10S102J	R	261		RS1/10S223J
R	107		RS1/10S102J	R	262		RS1/10S102J
R	108		RS1/10S473J	R	301		RS1/10S103J
R	109		RS1/10S473J	R	302		RS1/10S331J
R	110		RS1/10S223J	R	303		RS1/10S103J
R	111		RS1/10S181J	R	304		RS1/10S103J
R	112		RS1/10S102J	R	402		RS1/10S103J
R	113		RS1/10S102J	R	403		RS1/10S0R0J
R	114		RS1/10S181J	R	404		RS1/10S472J
R	115		RS1/10S223J	R	405		RS1/10S222J

====Circuit Symbol and No.===Part Name		Part No.	====Circuit Symbol and No.===Part Name			Part No.
R	406	RS1/10S682J	R	628		RS1/16S473J
R	407	RS1/10S102J	R	631		RS1/10S102J
R	408	RS1/10S472J	R	632		RS1/10S202J
R	409	RS1/10S682J	R	636		RA3C681J
R	410	RS1/10S561J	R	637		RS1/10S473J
R	411	RS1/10S103J	R	638		RS1/10S473J
R	412	RS1/10S222J	R	640		RS1/10S473J
R	413	RS1/10S152J	R	641		RS1/10S473J
R	414	RS1/10S392J	R	642		RS1/10S102J
R	415	RS1/10S392J	R	644		RS1/10S473J
R	416	RS1/10S272J	R	645		RS1/10S473J
R	417	RS1/10S0R0J	R	646		RS1/10S473J
R	418	RS1/10S222J	R	647		RS1/10S473J
R	419	RS1/10S222J	R	648		RS1/10S473J
R	420	RS1/10S562J	R	649		RS1/10S221J
R	421	RS1/10S222J	R	650		RS1/10S682J
R	422	RS1/10S102J	R	655		RS1/10S222J
R	424	RS1/10S222J	R	656		RS1/10S222J
R	425	RS1/10S105J	R	657		RS1/10S473J
R	426	RS1/10S473J	R	658		RS1/10S473J
R	427	RS1/10S562J	R	659	(RN1/10SE9102D)	GGC1317
R	428	RS1/10S472J	R	662		RS1/10S222J
R	429	RS1/10S224J	R	663		RS1/10S473J
R	430	RS1/10S0R0J	R	664		RS1/10S103J
R	432	RS1/10S681J	R	665	(RN1/10SE2402D)	GGC1318
R	455	RS1/10S0R0J	R	667		RS1/10S0R0J
R	502	RS1/10S681J	R	671		RS1/10S681J
R	504	RS1/10S105J	R	672		RS1/10S102J
R	507	RS1/10S222J	R	673		RS1/10S102J
R	552	RS1/10S102J	R	674		RS1/10S102J
R	553	RS1/10S102J	R	675		RS1/10S681J
R	554	RS1/10S102J	R	676		RS1/10S681J
R	555	RS1/10S102J	R	677		RS1/10S681J
R	556	RS1/10S102J	R	678		RS1/10S681J
R	557	RS1/10S0R0J	R	681		RS1/8S102J
R	558	RS1/10S0R0J	R	682		RS1/8S102J
R	559	RS1/10S222J	R	683		RS1/8S102J
R	560	RS1/10S222J	R	685		RS1/10S103J
R	561	RS1/10S684J	R	686		RS1/10S103J
R	562	RS1/10S681J	R	687		RS1/10S223J
R	563	RS1/10S562J	R	688		RS1/10S223J
R	564	RS1/10S102J	R	689		RS1/10S223J
R	565	RS1/10S0R0J	R	690		RS1/10S272J
R	566	RD1/4PU151J	R	691		RS1/10S223J
R	567	RS1/10S562J	R	692		RS1/10S272J
R	568	RS1/10S333J	R	693		RS1/10S223J
R	569	RS1/10S103J	R	694		RS1/10S272J
R	570	RS1/10S102J	R	695		RS1/10S473J
R	601	RS1/10S473J	R	696		RS1/10S473J
R	602	RS1/10S473J	R	697		RS1/10S473J
R	603	RS1/10S223J	R	698		RS1/8S331J
R	607	RS1/10S473J	R	700		RS1/10S274J
R	608	RS1/10S473J	R	801		RD1/4PU102J
R	609	RS1/16S473J	R	802		RS1/8S103J
R	610	RS1/10S102J	R	803		RS1/10S224J
R	611	RS1/10S473J	R	804		RS1/10S222J
R	612	RS1/10S473J	R	805		RD1/4PU102J
R	613	RS1/10S681J	R	806		RS1/10S104J
R	614	RS1/10S473J	R	807		RS1/10S222J
R	617	RS1/10S221J	R	809		RS1/10S1R0J
R	618	RS1/10S221J	R	810		RS1/10S103J
R	619	RS1/10S221J	R	811		RS1/10S104J
R	620	RS1/10S221J	R	815		RS1/10S222J
R	621	RS1/10S221J	R	816		RS1/8S222J
R	622	RS1/10S682J	R	817		RS1/10S222J
R	623	RS1/10S682J	R	818		RS1/8S222J
R	624	RS1/10S682J	R	819		RS1/8S103J
R	625	RS1/10S682J	R	820		RS2PMF330J
R	626	RS1/10S473J	R	821		RS1/8S472J
R	627	RS1/10S393J	R	830		RS1/10S102J

=====Circuit Symbol and No.===Part Name			Part No.	=====Circuit Symbol and No.===Part Name			Part No.
---	------	--------------------------------------	-----------------------	---	------	---------------------------------------	-----------------------
R	851		RD1/4PU561J	C	180		CCSQCH390J50
R	852		RS1/10S102J	C	182		CEJA1R0M50
R	853		RS1/10S102J	C	183		CEJA220M6R3
R	854		RS1/10S102J	C	184		CEJA101M10
R	855		RS1/10S102J	C	185		CEJA100M16
R	856		RS1/10S473J	C	186		CKSQYB223K50
R	857		RS1/10S473J	C	201		CEJA4R7M35
R	859		RS1/10S0R0J	C	202		CEJA4R7M35
R	871		RS1/10S102J	C	203		CEJA100M16
R	872		RD1/4PU102J	C	204		CEJA100M16
R	873		RS1/10S473J	C	205		CKSQYB104K16
R	911		RS1/8S0R0J	C	206		CKSQYB104K16
R	912		RS1/10S392J	C	207		CEJA100M16
R	913		RS1/10S752J	C	208		CEJA100M16
R	921		RS1/10S472J	C	217		CCSQCH221J50
R	922		RD1/4PU221J	C	218		CCSQCH101J50
R	923		RD1/4PU221J	C	227		CKSQYB103K50
R	931		RS1/10S472J	C	229		CEJANP100M10
R	932		RD1/4PU221J	C	230		CKSYB475K10
R	933		RD1/4PU221J	C	231		CEJA4R7M35
R	941		RS1/10S102J	C	232		CEJA4R7M35
R	942		RS1/10S102J	C	233		CEJA4R7M35
R	943		RS1/10S472J	C	234		CEJA4R7M35
R	951		RS1/10S103J	C	235		CEJA100M16
R	952		RS1/10S103J	C	236		CEJA100M16
R	953		RS1/10S473J	C	237		CCSQCH221J50
R	954		RS1/10S472J	C	238		CCSQCH221J50
R	955		RS1/10S473J	C	239		CCSQCH221J50
R	956		RS1/10S103J	C	240		CCSQCH221J50
R	961		RS1/8S153J	C	241		CCSQCH221J50
R	962		RS1/10S472J	C	242		CCSQCH221J50
R	963		RS1/10S472J	C	301		CKSYB224K16
R	964		RS1/10S102J	C	302		CKSYB224K16
R	971		RS1/10S822J	C	303		CKSYB224K16
R	973		RS1/10S102J	C	304		CKSYB224K16
R	974		RS1/10S473J	C	305		CKSYB105K16
R	975		RS1/10S472J	C	306		CEHAR100M16
R	991		RD1/4PU221J	C	308	3300µF/16V	CCH1125
R	992		RS1/10S221J	C	309		CEHAR010M50
R	993		RS1/10S472J	C	310		CEHAR330M10
R	994		RS1/10S222J	C	351		CCSQCH221J50
				C	352		CCSQCH101J50
CAPACITORS				C	353		CKSYB475K10
				C	401		CKSQYB103K50
C	101		CKSQYB104K16	C	402		CKSQYB103K50
C	102		CKSQYB104K16				
C	103		CEJA1R0M50	C	403		CKSQYB103K50
C	104		CEJA1R0M50	C	404		CKSQYB103K50
C	105		CEJA100M16	C	405		CEV220M10
				C	406		CKSQYB103K50
C	106		CEJA100M16	C	407		CEV220M10
C	107		CEJA1R0M50				
C	108		CEJA1R0M50	C	408		CKSQYB103K50
C	109		CKSQYB102K50	C	409		CKSQYB103K50
C	131		CKSQYB681K50	C	410		CEV220M6R3
				C	411		CKSQYB103K50
C	132		CEJA101M10	C	413	4.7µF/16V	CCH1250
C	141		CCSQCH101J50				
C	151		CKSQYB223K50	C	414		CKSQYB103K50
C	152		CKSQYB223K50	C	415		CKSQYB103K50
C	153		CEV1R0M50	C	416		CKLSR473K16
				C	417	4.7µF/16V	CCH1250
C	154		CEV1R0M50	C	418		CKSQYB103K50
C	171		CEJA1R0M50				
C	172		CEJA1R0M50	C	419		CEVR47M50
C	173		CEV4R7M25	C	420		CCSQCH150J50
C	174		CEV4R7M25	C	421		CCSQCH150J50
				C	422		CKSQYB103K50
C	175		CCSQCH820J50	C	423		CKSQYB103K50
C	176		CCSQCH820J50				
C	177		CCSQCH390J50	C	424		CCSQCH101J50
C	178		CCSQCH390J50	C	425		CKSQYB473K16
C	179		CCSQCH390J50	C	426		CEV220M6R3
				C	427		CKSQYB103K50
				C	428		CKSQYB103K50

DEH-P945R,DEX-P99R

=====Circuit Symbol and No.===Part Name	Part No.
C 429	CKSQYB471K50
C 430	CKSQYB103K50
C 431	CKSQYB223K50
C 433	CKSQYB103K50
C 434	CKSQYB223K50
C 435	CKSQYB223K50
C 503	CCSQCH270J50
C 504	CCSQCH270J50
C 554	CKSQYB103K50
C 555	CKSQYB103K50
C 556	CKSQYB472K50
C 557	CKSQYB104K16
C 558	CKSQYB105K10
C 559	CKSQYB104K16
C 560	CKSQYB222K50
C 561	CCSQCH101J50
C 562	CEJA100M16
C 563	CKSQYB223K50
C 564	CKSQYB104K16
C 565	CKSQYB223K50
C 601	CCSQCH200J50
C 602	CCSQCH200J50
C 604	CEJA101M10
C 606	CCSQCH101J50
C 608	CCSQCH101J50
C 609	CEJA100M16
C 610	CKSQYB104K16
C 615	CCSQCH101J50
C 616	CCSQCH101J50
C 617	CCSQCH101J50
C 618	CCSQCH101J50
C 619	CCSQCH101J50
C 620	CCSRCH101J50
C 651	CKSYB475K10
C 653	CKSQYB102K50
C 671	CKSQYB103K50
C 672	CEJA100M16
C 683	CKSQYB103K50
C 684	CKSQYB103K50
C 685	CKSQYB103K50
C 686	CKSQYB473K16
C 803	CKSQYB103K50
C 806	CKSYB475K10
C 807	CCSQCH101J50
C 808	CEJA101M16
C 809	CCSQCH101J50
C 811	CCSCH101J50
C 851	CKSQYB103K50
C 852	CKSYB475K10
C 853	CKSQYB102K50
C 854	CCSQCH101J50
C 855	CCSQCH101J50
C 856	CKSQYB102K50
C 871 470µF/16V	CCH1183
C 872	CEJA100M16
C 873	CKSQYB103K50
C 874	CKSQYB102K50
C 876	CASA4R7M10
C 911 1500µF/16V	CCH1312
C 912	CKSQYB472K50
C 913	CKSQYB103K50
C 914	CASA470M10
C 921	CKSQYB103K50
C 941	CKSQYB102K50
C 942 330µF/10V	CCH1181
C 943	CEJA470M10
C 944	CEJA1R0M50
C 945	CEJA101M10
C 946	CEJA470M10
C 947	CKSQYB102K50

=====Circuit Symbol and No.===Part Name	Part No.
C 951	CKSQYB105K10
C 952	CCSQCH101J50
C 971	CEJA2R2M50
C 972	CKSQYB102K50
C 973	CKSQYB104K16
C 991	CKSQYB473K16
C 992	CKSQYB102K50
C 993	CEJA101M10

A Unit Number : CWM5695(DEX-P99R/EW)
Unit Name : Tuner Amp Unit

MISCELLANEOUS

IC	101	IC	CA0008AM
IC	102	IC	TA2050S
IC	171	IC	BA3131FS
IC	401	IC	PM2007A
IC	551	IC	PMW001B
IC	552	IC	TA75S393F
IC	601	IC	PD4905A
IC	651	IC	PD4931A
IC	671	IC	PD0236AM
IC	851	IC	BA6288FS
IC	871	IC	NJM78M05FA
IC	941	IC	PA2024A
IC	971	IC	S-80730ANDT
Q	101	Transistor	2SA1162
Q	102	Transistor	UN2212
Q	131	Transistor	2SC2712
Q	132	Transistor	IMD2A
Q	151	Transistor	2SD1757K
Q	152	Transistor	2SD1757K
Q	153	Transistor	IMH3A
Q	154	Transistor	UN2111
Q	171	Transistor	DTC314TK
Q	172	Transistor	DTC314TK
Q	231	Transistor	FMG13
Q	232	Transistor	FMG13
Q	233	Transistor	FMG13
Q	251	Transistor	DTA143EK
Q	252	Transistor	UN2211
Q	253	Transistor	IMD2A
Q	261	Transistor	IMD2A
Q	302	Transistor	UN2212
Q	401	Transistor	2SC2712
Q	402	Transistor	2SC2712
Q	403	Transistor	IMD2A
Q	551	Transistor	DTC143TK
Q	601	Transistor	UN2111
Q	602	Transistor	UN2211
Q	651	Transistor	UN2112
Q	681	Transistor	2SA1162
Q	682	Transistor	UN2212
Q	683	Transistor	2SC2712
Q	684	Transistor	2SC2712
Q	685	Transistor	2SC2712
Q	802	Transistor	2SC2712
Q	803	Transistor	UN2211
Q	804	Transistor	2SD1760F5
Q	805	Transistor	UN2111
Q	806	Transistor	2SB1238
Q	807	Transistor	2SB1238
Q	808	Transistor	DTC143EK
Q	810	Transistor	2SC2712
Q	811	Transistor	2SC2712
Q	812	Transistor	DTA144EK
Q	851	Transistor	2SD1760F5
Q	852	Transistor	UN2111

=====Circuit Symbol and No.===		Part Name	Part No.
Q	853	Transistor	UN2212
Q	871	Transistor	2SB1238
Q	872	Transistor	DTC123EK
Q	911	Transistor	2SD1760F5
Q	913	Transistor	IMD2A
Q	921	Transistor	2SB1243
Q	922	Transistor	UN2212
Q	931	Transistor	2SB1243
Q	932	Transistor	UN2212
Q	951	Transistor	UN2211
Q	952	Transistor	IMX1
Q	961	Transistor	2SA1162
Q	971	Transistor	2SC2712
Q	991	Transistor	IMD2A
Q	992	Transistor	2SD2396
D	131	Diode	MA3039(L)
D	231	Diode	MA152WA
D	232	Diode	MA152WA
D	233	Diode	MA152WA
D	261	Diode	MA152WK
D	262	Diode	MA152WK
D	263	Diode	MA152WK
D	401	Diode	MA152WK
D	402	Diode	MA152WK
D	551	Diode	MA3047(M)
D	803	Diode	MA3062(M)
D	804	Diode	DA204K
D	805	Diode	DA204K
D	806	Diode	DA204K
D	807	Diode	DA204K
D	808	Diode	MA3062(M)
D	809	Diode	DA204K
D	810	Diode	ERA15-02VH
D	851	Diode	MA3075(H)
D	852	Diode	1SS133
D	853	Diode	1SS133
D	871	Diode	MA152WK
D	901	Diode	ERA15-02VH
D	902	Diode	ERA15-02VH
D	911	Diode	HZS6L(B1)
D	912	Diode	ERA15-02VH
D	921	Diode	ERA15-02VH
D	922	Diode	ERA15-02VH
D	931	Diode	ERA15-02VH
D	932	Diode	ERA15-02VH
D	951	Diode	ERA15-02VH
D	952	Diode	HZS7L(C3)
D	953	Diode	HZS7L(A1)
D	961	Diode	MA152WK
D	971	Diode	MA152WK
D	991	Diode	HZS9L(B1)
L	101	Inductor	LAU3R3K
L	141	Inductor	CTF1420
L	221	Inductor	CTF1295
L	222	Inductor	LCTB2R2K2125
L	223	Ferri-Inductor	LAU1R0M
L	401	Ferri-Inductor	LAU2R2K
L	403	Inductor	LAU2R2K
L	551	Inductor	CTF1295
L	601	High Loss Inductor	CTF1410
L	602	High Loss Inductor	CTF1410
L	603	High Loss Inductor	CTF1410
L	651	High Loss Inductor	CTF1410
L	652	Inductor	CTF1295
L	671	Inductor	CTF1295
L	801	High Loss Inductor	CTF1410
L	961	Ferri-Inductor	LAU2R2K
TH	651	Thermistor	CCX1037
X	401	Crystal Resonator 7.200MHz	CSS1379
X	501	Crystal Resonator 4.332MHz	CSS1056

=====Circuit Symbol and No.===		Part Name	Part No.
X	601	Resonator 12.58291MHz	CSS1402
X	651	Resonator 4.19MHz	CSS1436
S	601	Slide Switch(PRO/STD)	CSH1048
IL	801	Lamp 14V40mA	CEL1359
VR	551	Semi-fixed 22kΩ(B)	CCP1129
		High Out Unit	CWX2215
		DSP Unit	CWX2214
		FM/AM Tuner Unit	CWE1416
BZ	601	Buzzer	CPV1012
FU	801	IC Protector 0.4A	ICP-N10

RESISTORS

R	101		RS1/10S620J
R	102		RS1/10S101J
R	103		RS1/10S101J
R	104		RS1/10S222J
R	105		RS1/10S103J
R	106		RS1/10S102J
R	107		RS1/10S102J
R	108		RS1/10S473J
R	109		RS1/10S473J
R	110		RS1/10S223J
R	111		RS1/10S181J
R	112		RS1/10S102J
R	113		RS1/10S102J
R	114		RS1/10S181J
R	115		RS1/10S223J
R	116		RS1/10S332J
R	117		RS1/10S562J
R	118		RS1/10S472J
R	131		RS1/10S103J
R	132		RS1/10S223J
R	133		RS1/10S473J
R	134		RS1/10S104J
R	135		RS1/10S222J
R	136		RS1/10S561J
R	151		RS1/10S272J
R	152		RS1/10S272J
R	155		RS1/10S222J
R	156		RS1/10S222J
R	157		RS1/10S224J
R	158		RS1/10S224J
R	159		RS1/10S223J
R	160		RS1/10S223J
R	171		RS1/10S393J
R	172		RS1/10S393J
R	173		RS1/10S752J
R	174		RS1/10S752J
R	175		RS1/10S222J
R	176		RS1/10S222J
R	177		RS1/10S473J
R	178		RS1/10S473J
R	179		RS1/10S513J
R	180		RS1/10S513J
R	181		RS1/10S563J
R	182		RS1/10S563J
R	184		RS1/10S103J
R	185		RS1/10S224J
R	186		RS1/10S102J
R	187		RS1/10S102J
R	189		RS1/10S104J
R	190		RS1/10S104J
R	201		RS1/10S472J
R	202		RS1/10S472J
R	203		RS1/10S472J
R	204		RS1/10S472J
R	205		RS1/10S223J

=====Circuit Symbol and No.===Part Name		Part No.	=====Circuit Symbol and No.===Part Name		Part No.
R	206	RS1/10S223J	R	565	RS1/10S0R0J
R	207	RS1/10S331J	R	566	RD1/4PU151J
R	208	RS1/10S331J	R	567	RS1/10S562J
R	209	RS1/10S331J	R	568	RS1/10S333J
R	210		R	569	RS1/10S103J
R	227 (RN1/10SE4702D)	GGC1316	R	570	RS1/10S102J
R	228 (RN1/10SE4702D)	GGC1316	R	601	RS1/10S473J
R	229	RS1/16S102J	R	602	RS1/10S473J
R	231	RS1/10S821J	R	603	RS1/10S223J
R	232	RS1/10S821J	R	607	RS1/10S473J
R	233	RS1/10S821J	R	608	RS1/10S473J
R	234	RS1/10S821J	R	609	RS1/16S473J
R	235	RS1/10S821J	R	610	RS1/10S102J
R	236	RS1/10S821J	R	611	RS1/10S473J
R	237	RS1/10S113J	R	612	RS1/10S473J
R	238	RS1/10S113J	R	613	RS1/10S681J
R	239	RS1/10S113J	R	614	RS1/10S473J
R	240	RS1/10S113J	R	617	RS1/10S221J
R	241	RS1/10S113J	R	618	RS1/10S221J
R	242	RS1/10S113J	R	619	RS1/10S221J
R	251	RS1/8S122J	R	620	RS1/10S221J
R	252	RS1/10S122J	R	621	RS1/10S221J
R	261	RS1/10S223J	R	622	RS1/10S682J
R	262	RS1/10S102J	R	623	RS1/10S682J
R	402	RS1/10S103J	R	624	RS1/10S682J
R	403	RS1/10S0R0J	R	625	RS1/10S682J
R	404	RS1/10S472J	R	626	RS1/10S473J
R	405	RS1/10S222J	R	627	RS1/10S393J
R	406	RS1/16S682J	R	629	RS1/16S473J
R	407	RS1/10S102J	R	631	RS1/10S102J
R	408	RS1/10S472J	R	632	RS1/10S202J
R	409	RS1/10S682J	R	636	RA3C681J
R	410	RS1/10S561J	R	637	RS1/10S473J
R	411	RS1/10S103J	R	638	RS1/10S473J
R	412	RS1/10S222J	R	640	RS1/10S473J
R	413	RS1/10S152J	R	641	RS1/10S473J
R	414	RS1/10S392J	R	642	RS1/10S102J
R	415	RS1/10S392J	R	644	RS1/10S473J
R	416	RS1/10S272J	R	645	RS1/10S473J
R	417	RS1/10S0R0J	R	646	RS1/10S473J
R	418	RS1/10S222J	R	647	RS1/10S473J
R	419	RS1/10S222J	R	648	RS1/10S473J
R	420	RS1/10S562J	R	649	RS1/10S221J
R	421	RS1/10S222J	R	650	RS1/10S682J
R	422	RS1/10S102J	R	655	RS1/10S222J
R	424	RS1/10S222J	R	656	RS1/10S222J
R	425	RS1/10S105J	R	657	RS1/10S473J
R	426	RS1/10S473J	R	658	RS1/10S473J
R	427	RS1/10S562J	R	659 (RN1/10SE9102D)	GGC1317
R	428	RS1/10S472J	R	662	RS1/10S222J
R	429	RS1/10S224J	R	663	RS1/10S473J
R	430	RS1/10S0R0J	R	664	RS1/10S103J
R	432	RS1/10S681J	R	665 (RN1/10SE2402D)	GGC1318
R	455	RS1/10S0R0J	R	667	RS1/10S0R0J
R	502	RS1/10S681J	R	671	RS1/10S681J
R	504	RS1/10S105J	R	672	RS1/10S102J
R	507	RS1/10S222J	R	673	RS1/10S102J
R	552	RS1/10S102J	R	674	RS1/10S102J
R	553	RS1/10S102J	R	675	RS1/10S681J
R	554	RS1/10S102J	R	676	RS1/10S681J
R	555	RS1/10S102J	R	677	RS1/10S681J
R	556	RS1/10S102J	R	678	RS1/10S681J
R	557	RS1/10S0R0J	R	681	RS1/8S102J
R	558	RS1/10S0R0J	R	682	RS1/8S102J
R	559	RS1/10S222J	R	683	RS1/8S102J
R	560	RS1/10S222J	R	685	RS1/10S103J
R	561	RS1/10S684J	R	686	RS1/10S103J
R	562	RS1/10S681J	R	687	RS1/10S223J
R	563	RS1/10S562J	R	688	RS1/10S223J
R	564	RS1/10S102J	R	689	RS1/10S223J

=====Circuit Symbol and No.===Part Name	Part No.
R 690	RS1/10S272J
R 691	RS1/10S223J
R 692	RS1/10S272J
R 693	RS1/10S223J
R 694	RS1/10S272J
R 695	RS1/10S473J
R 696	RS1/10S473J
R 697	RS1/10S473J
R 698	RS1/8S331J
R 700	RS1/10S274J
R 801	RD1/4PU102J
R 802	RS1/8S103J
R 803	RS1/10S224J
R 804	RS1/10S222J
R 805	RD1/4PU102J
R 806	RS1/10S104J
R 807	RS1/10S222J
R 809	RS1/10S1R0J
R 810	RS1/10S103J
R 811	RS1/10S104J
R 815	RS1/10S222J
R 816	RS1/8S222J
R 817	RS1/10S222J
R 818	RS1/8S222J
R 819	RS1/8S103J
R 820	RS2PMF330J
R 821	RS1/8S472J
R 830	RS1/10S102J
R 851	RD1/4PU561J
R 852	RS1/10S102J
R 853	RS1/10S102J
R 854	RS1/10S102J
R 855	RS1/10S102J
R 856	RS1/10S473J
R 857	RS1/10S473J
R 859	RS1/10S0R0J
R 871	RS1/10S102J
R 872	RD1/4PU102J
R 873	RS1/10S473J
R 911	RS1/8S0R0J
R 912	RS1/10S392J
R 913	RS1/10S752J
R 921	RS1/10S472J
R 922	RD1/4PU221J
R 923	RD1/4PU221J
R 931	RS1/10S472J
R 932	RD1/4PU221J
R 933	RD1/4PU221J
R 941	RS1/10S102J
R 942	RS1/10S102J
R 943	RS1/10S472J
R 951	RS1/10S103J
R 952	RS1/10S103J
R 953	RS1/10S473J
R 954	RS1/10S472J
R 955	RS1/10S473J
R 956	RS1/10S103J
R 961	RS1/8S153J
R 962	RS1/10S472J
R 963	RS1/10S472J
R 964	RS1/10S102J
R 971	RS1/10S822J
R 973	RS1/10S102J
R 974	RS1/10S473J
R 975	RS1/10S472J
R 991	RD1/4PU221J
R 992	RS1/10S221J
R 993	RS1/10S472J
R 994	RS1/10S222J

=====Circuit Symbol and No.===Part Name	Part No.
CAPACITORS	
C 101	CKSQYB104K16
C 102	CKSQYB104K16
C 103	CEJA1R0M50
C 104	CEJA1R0M50
C 105	CEJA100M16
C 106	CEJA100M16
C 107	CEJA1R0M50
C 108	CEJA1R0M50
C 109	CKSQYB102K50
C 131	CKSQYB681K50
C 132	CEJA101M10
C 141	CCSQCH101J50
C 151	CKSQYB223K50
C 152	CKSQYB223K50
C 153	CEV1R0M50
C 154	CEV1R0M50
C 171	CEJA1R0M50
C 172	CEJA1R0M50
C 173	CEV4R7M25
C 174	CEV4R7M25
C 175	CCSQCH820J50
C 176	CCSQCH820J50
C 177	CCSQCH390J50
C 178	CCSQCH390J50
C 179	CCSQCH390J50
C 180	CCSQCH390J50
C 182	CEJA1R0M50
C 183	CEJA220M6R3
C 184	CEJA101M10
C 185	CEJA100M16
C 186	CKSQYB223K50
C 201	CEJA4R7M35
C 202	CEJA4R7M35
C 203	CEJA100M16
C 204	CEJA100M16
C 205	CKSQYB104K16
C 206	CKSQYB104K16
C 207	CEJA100M16
C 208	CEJA100M16
C 217	CCSQCH221J50
C 218	CCSQCH101J50
C 227	CKSQYB103K50
C 229	CEJANP100M10
C 230	CKSYB475K10
C 231	CEZA4R7M25
C 232	CEZA4R7M25
C 233	CEZA4R7M25
C 234	CEZA4R7M25
C 235	CEZA100M16
C 236	CEZA100M16
C 237	CCSQCH221J50
C 238	CCSQCH221J50
C 239	CCSQCH221J50
C 240	CCSQCH221J50
C 241	CCSQCH221J50
C 242	CCSQCH221J50
C 307	CKSQYB104K16
C 308	CCH1125
C 351	CCSQCH221J50
C 352	CCSQCH101J50
C 353	CKSYB475K10
C 401	CKSQYB103K50
C 402	CKSQYB103K50
C 403	CKSQYB103K50
C 404	CKSQYB103K50

DEH-P945R,DEX-P99R

C	405		CEV220M10
C	406		CKSQYB103K50
C	407		CEV220M10
C	408		CKSQYB103K50
C	409		CKSQYB103K50
C	410		CEV220M6R3
C	411		CKSQYB103K50
C	413	4.7μF/16V	CCH1250
C	414		CKSQYB103K50
C	415		CKSQYB103K50
C	416		CKLSR473K16
C	417	4.7μF/16V	CCH1250
C	418		CKSQYB103K50
C	419		CEVR47M50
C	420		CCSQCH150J50
C	421		CCSQCH150J50
C	422		CKSQYB103K50
C	423		CKSQYB103K50
C	424		CCSQCH101J50
C	425		CKSQYB473K16
C	426		CEV220M6R3
C	427		CKSQYB103K50
C	428		CKSQYB103K50
C	429		CKSQYB471K50
C	430		CKSQYB103K50
C	431		CKSQYB223K50
C	433		CKSQYB103K50
C	434		CKSQYB223K50
C	435		CKSQYB223K50
C	503		CCSQCH270J50
C	504		CCSQCH270J50
C	554		CKSQYB103K50
C	555		CKSQYB103K50
C	556		CKSQYB472K50
C	557		CKSQYB104K16
C	558		CKSQYB105K10
C	559		CKSQYB104K16
C	560		CKSQYB222K50
C	561		CCSQCH101J50
C	562		CEJA100M16
C	563		CKSQYB223K50
C	564		CKSQYB104K16
C	565		CKSQYB223K50
C	601		CCSQCH200J50
C	602		CCSQCH200J50
C	604		CEJA101M10
C	606		CCSQCH101J50
C	608		CCSQCH101J50
C	609		CEJA100M16
C	610		CKSQYB104K16
C	615		CCSQCH101J50
C	616		CCSQCH101J50
C	617		CCSQCH101J50
C	618		CCSQCH101J50
C	619		CCSQCH101J50
C	620		CCSRCH101J50
C	651		CKSYB475K10
C	653		CKSQYB102K50
C	671		CKSQYB103K50
C	672		CEZA100M16
C	683		CKSQYB103K50
C	684		CKSQYB103K50
C	685		CKSQYB103K50
C	686		CKSQYB473K16
C	803		CKSQYB103K50

C	806		CKSYB475K10
C	807		CCSQCH101J50
C	808		CEJA101M16
C	809		CCSQCH101J50
C	811		CCSCH101J50
C	851		CKSQYB103K50
C	852		CKSYB475K10
C	853		CKSQYB102K50
C	854		CCSQCH101J50
C	855		CCSQCH101J50
C	856		CKSQYB102K50
C	871	470μF/16V	CCH1183
C	872		CEZA100M16
C	873		CKSQYB103K50
C	874		CKSQYB102K50
C	876		CASA4R7M10
C	911	1500μF/16V	CCH1312
C	912		CKSQYB472K50
C	913		CKSQYB103K50
C	914		CASA470M10
C	921		CKSQYB103K50
C	941		CKSQYB102K50
C	942	330μF/10V	CCH1181
C	943		CEZA470M25
C	944		CEJA1R0M50
C	945		CEJA101M10
C	946		CEJA470M10
C	947		CKSQYB102K50
C	951		CKSQYB105K10
C	952		CCSQCH101J50
C	971		CEJA2R2M50
C	972		CKSQYB102K50
C	973		CKSQYB104K16
C	991		CKSQYB473K16
C	992		CKSQYB102K50
C	993		CEJA101M10

C Unit Number : CWM5688(DEH-P945R/EW)
Unit Number : CWM5687(DEX-P99R/EW)
Unit Name   : Keyboard Unit

MISCELLANEOUS

IC	1901	HIC Module	RS-140
IC	1902	IC	PD6237C
IC	1903	IC	SED1540F0A
IC	1904	IC	SED1526F0A
IC	1905	IC	SED1526F0A
Q	1901	Transistor	IMH10A
Q	1902	Transistor	IMH10A
Q	1903	Transistor	IMH10A
D	1901	Diode	MA153
D	1902	Diode	MA153
D	1903	Diode	MA153
D	1904	Diode	MA152WA
D	1905	LED	CL170PGCD
D	1906	LED	CL170DCD
D	1907	LED	CL170PGCD
D	1909	LED	CL170PGCD
D	1910	LED	CL170PGCD
D	1911	LED	CL170DCD
D	1912	LED	CL170PGCD
D	1913	LED	CL170PGCD
D	1914	LED	CL170PGCD
D	1915	LED	CL170DCD
D	1917	LED	CL170PGCD
D	1918	LED	CL170PGCD
D	1919	LED	CL170DCD

=====Circuit Symbol and No.===Part Name			Part No.
D	1920	LED	CL170PGCD
L	1901	Chip Inductor	LCTA2R2J3225
L	1902	Inductor	LCTB2R2K2125
L	1903	Inductor	LCTB2R2K2125
L	1904	Inductor	LCTB2R2K2125
L	1905	Inductor	LCTA4R7J3225
X	1901	Radiator 3.77MHz	CSS1427
S	1901	Spring Switch	CSN1042
S	1902	Push Switch	CSG1117
S	1903	Switch	CSG1075
S	1904	Push Switch	CSG1117
S	1906	Push Switch	CSG1117
S	1907	Switch	CSG1075
S	1908	Push Switch	CSG1117
S	1909	Push Switch	CSG1117
S	1910	Push Switch	CSG1118
S	1911	Switch(DEH-P945R/EW)	CSG1084
S	1911	Switch(DEX-P99R/EW)	CSG1107
S	1913	Push Switch	CSG1117
S	1914	Push Switch	CSG1117
S	1915	Switch(DEH-P945R/EW)	CSG1085
S	1915	Switch(DEX-P99R/EW)	CSG1108
S	1916	Push Switch	CSG1118
VR	1901	Semi-fixed 330kΩ(B)	CCP1238
VR	1902	Semi-fixed 330kΩ(B)	CCP1238
EL	1901		CEL1580
LCD1901		LCD(DEH-P945R/EW)	CAW1471
LCD1901		LCD(DEX-P99R/EW)	CAW1493

RESISTORS

R	1901		RS1/8S222J
R	1902		RS1/8S222J
R	1903		RS1/8S222J
R	1904		RS1/10S121J
R	1905		RS1/10S473J
R	1907		RS1/8S751J
R	1908		RS1/10S103J
R	1910		RS1/8S751J
R	1911		RS1/8S751J
R	1912		RS1/8S102J
R	1913		RS1/10S103J
R	1915		RS1/10S0R0J
R	1916		RS1/8S751J
R	1917		RS1/4S471J
R	1918		RS1/10S103J
R	1920		RS1/10S0R0J
R	1922		RS1/10S103J
R	1927		RS1/10S473J
R	1928		RS1/10S473J
R	1929		RS1/10S473J
R	1930		RS1/10S473J
R	1931		RS1/16S470J
R	1932		RS1/16S470J
R	1935		RS1/10S473J
R	1936		RS1/10S473J
R	1937		RS1/10S103J
R	1938		RS1/10S473J
R	1939		RA4C101J
R	1940		RS1/10S103J
R	1941		RA4C101J
R	1942		RS1/10S103J
R	1943		RS1/10S473J
R	1944		RS1/10S473J
R	1945		RS1/10S473J
R	1946		RA3C102J
R	1947		RA3C102J
R	1948		RA3C102J
R	1950		RS1/10S624J
R	1951		RS1/10S624J
R	1952		RS1/10S624J

=====Circuit Symbol and No.===Part Name			Part No.
R	1953		RS1/10S624J
R	1954		RS1/10S471J
R	1955		RS1/10S471J
R	1956		RS1/10S471J
R	1957		RS1/10S471J
R	1958		RS1/10S473J
R	1959		RS1/10S472J
R	1960		RS1/10S103J
R	1961		RS1/10S103J
R	1962		RS1/10S103J
R	1965		RS1/8S751J
R	1966		RS1/8S751J
R	1967		RS1/8S751J
R	1968		RS1/8S102J
R	1970		RS1/8S751J

CAPACITORS

C	1901		CSZSR100M6R3
C	1906		CKSQYB103K50
C	1907		CKSQYB103K50
C	1908		CKSQYB103K50
C	1909		CKSQYF105Z16
C	1910		CKSQYF105Z16
C	1911		CKSQYF105Z16
C	1912		CKSQYF105Z16
C	1913		CKSQYF105Z16
C	1914		CKSQYF105Z16
C	1915		CKSQYF105Z16
C	1916		CKSQYF105Z16
C	1917		CKSQYB103K50
C	1918		CSZS1R0M16
C	1919		CSZS1R0M16
C	1920		CSZS1R0M16
C	1921		CKSQYF105Z16
C	1922		CKSQYF105Z16
C	1923		CKSQYF105Z16
C	1924		CKSQYF105Z16
C	1925		CKSQYF105Z16
C	1926		CKSQYB103K50
C	1927		CSZS1R0M16
C	1928		CSZS1R0M16
C	1929		CSZS1R0M16
C	1934		CSZSR100M6R3
C	1935		CKSQYB104K16
C	1936		CSZSR100M6R3

F Unit Number : CWX2214
Unit Name : DSP Unit

MISCELLANEOUS

IC	3001	IC	PD5445C
IC	3101	IC	AK7712AVT
IC	3102	IC	TC9331F
IC	3103	IC(M5M51016BTP-70LL)	GGC1325
IC	3141	IC	BU4066BCFV
IC	3142	IC	TC7S08FU
IC	3201	IC	AK4321VF
IC	3301	IC	PM0017AM
L	3001	High Loss Inductor	CTF1410
L	3002	High Loss Inductor	CTF1410
L	3003	High Loss Inductor	CTF1410
L	3004	High Loss Inductor	CTF1410
L	3101	High Loss Inductor	CTF1410
L	3102	High Loss Inductor	CTF1410
L	3103	High Loss Inductor	CTF1410
L	3104	High Loss Inductor	CTF1410
L	3141	Inductor	LCTB2R2K2125
L	3142	High Loss Inductor	CTF1410
L	3143	Inductor	CTF1420
L	3151	High Loss Inductor	CTF1410

=====Circuit Symbol and No.===Part Name	Part No.
L 3152 High Loss Inductor	CTF1410
L 3153 High Loss Inductor	CTF1410
L 3154 High Loss Inductor	CTF1410
L 3201 High Loss Inductor	CTF1410
L 3301 High Loss Inductor	CTF1410
L 3302 High Loss Inductor	CTF1410
L 3303 High Loss Inductor	CTF1410
L 3304 High Loss Inductor	CTF1410
L 3305 High Loss Inductor	CTF1410
L 3306 High Loss Inductor	CTF1410
X 3001 Resonator 10.00MHz	CSS1428
X 3101 Crystal Resonator 16.9344MHz	CSS1067
X 3102 Crystal Resonator 32.0MHz	CSS1360

RESISTORS

R 3001	RS1/16S102J
R 3002	RS1/16S102J
R 3003	RS1/16S102J
R 3004	RS1/16S681J
R 3005	RS1/16S681J
R 3006	RS1/16S681J
R 3007	RS1/16S681J
R 3008	RS1/16S681J
R 3009	RS1/16S102J
R 3010	RS1/16S102J
R 3011	RS1/16S102J
R 3012	RS1/16S102J
R 3013	RS1/16S102J
R 3014	RS1/16S102J
R 3015	RS1/16S473J
R 3016	RA3C102J
R 3018	RS1/16S102J
R 3019	RS1/16S102J
R 3020	RS1/16S102J
R 3021	RS1/16S102J
R 3022	RS1/16S102J
R 3023	RS1/16S102J
R 3024	RS1/16S102J
R 3025	RS1/16S102J
R 3026	RS1/16S102J
R 3027	RS1/16S102J
R 3028	RS1/16S102J
R 3029	RS1/16S102J
R 3030	RS1/16S102J
R 3031	RS1/16S102J
R 3032	RS1/16S102J
R 3033	RS1/16S473J
R 3034	RS1/16S473J
R 3035	RS1/16S473J
R 3036	RS1/16S105J
R 3037	RS1/16S102J
R 3101	RS1/16S473J
R 3102	RS1/16S473J
R 3103	RA4C102J
R 3104	RA4C102J
R 3105	RA4C102J
R 3106	RA4C102J
R 3108	RA4C102J
R 3109	RA4C102J
R 3110	RA4C102J
R 3111	RA4C102J
R 3112	RS1/16S105J
R 3113	RS1/16S105J
R 3114	RS1/16S102J
R 3115	RS1/16S102J
R 3116	RS1/16S473J
R 3141	RA3C103J
R 3151	RSK1/16S151J
R 3152	RSK1/16S151J
R 3153	RSK1/16S151J

=====Circuit Symbol and No.===Part Name	Part No.
R 3154	RSK1/16S151J
R 3155	RSK1/16S151J
R 3156	RSK1/16S151J
R 3160	RS1/10S0R0J

CAPACITORS

C 3002	CKSYB106K6R3
C 3102	CKSQYB103K50
C 3104	CCSRCH100D50
C 3105	CCSRCH100D50
C 3107	CKSYB106K6R3
C 3108	CKSQYB104K16
C 3109	CSZSR470M6R3
C 3110	CKSQYB104K16
C 3111	CKSYB106K6R3
C 3112	CKSQYB104K16
C 3113	CCSQCH221J50
C 3114	CKSYB106K6R3
C 3115	CCSQCH100J50
C 3116	CCSQCH100J50
C 3117	CKSYB106K6R3
C 3119	CKSYB106K6R3
C 3120	CKSQYB104K16
C 3141	CKSQYB103K50
C 3143	CKSQYB103K50
C 3145	CCSQCH470J50
C 3146	CCSRCH221J50
C 3151	CKLSRB332K50
C 3152	CKLSRB332K50
C 3159	CKLSRR103K16
C 3160	CKLSRR103K16
C 3161	CKLSRR103K16
C 3162	CKLSRR103K16
C 3163	CKLSRR103K16
C 3164	CKLSRR103K16
C 3201	CKSYB106K6R3
C 3203	CKSQYB104K16
C 3205	CSZSR470M6R3
C 3206	CKSQYB104K16
C 3207	CKSYB106K6R3
C 3301	CKSYB475K10
C 3302	CKSYB475K10
C 3303	CKSYB475K10
C 3304	CKSYB475K10
C 3305	CKSYB475K10
C 3306	CKSYB475K10
C 3307	CKSQYB104K16
C 3308	CKSYB106K6R3
C 3309	CKSQYB104K16

L Unit Number : CWX2216
Unit Name   : ASL Unit

MISCELLANEOUS

IC 4501	IC	NJM2068MD
IC 4502	IC	NJM2068MD
Q 4501	Transistor	2SC2458
D 4501	Diode	MA152WK
D 4502	Diode	MA3043(LMH)
D 4503	Diode	MA3075(M)
VR 4501	Semi-fixed 10kΩ(B)	CCP1319
MIC 4501		CPM1011

RESISTORS

R 4501	RS1/8S222J
R 4502	RS1/8S683J
R 4503	RS1/8S103J
R 4504	RS1/8S472J
R 4505	RS1/8S471J

=====Circuit Symbol and No.===Part Name		Part No.
R	4506	RS1/8S682J
R	4507	RS1/8S684J
R	4508	RS1/8S562J
R	4509	RS1/8S391J
R	4510	RS1/8S472J
R	4511	RS1/8S472J
R	4512	RS1/8S472J
R	4513	RS1/8S153J
R	4514	RS1/8S153J
R	4515	RS1/8S102J
R	4517	RS1/8S270J

CAPACITORS

C	4501	CEJA470M10
C	4502	CEJA470M10
C	4503	CEJAR68M50
C	4504	CEJA100M16
C	4505	CEJA470M10
C	4506	CEJA470M16
C	4507	CEJA100M16
C	4508	CEJANP220M10
C	4509	CEJAR68M50
C	4510	CEJANP100M10
C	4511	CKSYB823K50
C	4512	CCSCH101J50
C	4513	CEJA470M10

M Unit Number :
Unit Name   : Microphone Jack Unit

D	4601	LED	BR4361F

K Unit Number :
Unit Name   : Flap Sense PCB

S	951	Switch(CLOSE)	CSN1012
S	952	Switch(HOME)	CSN1022

G Unit Number : CWM4538(DEX-P99R/EW)
Unit Name   : D/D Converter Unit

MISCELLANEOUS

IC	4001	IC	TL1451ANS
Q	4001	Transistor	2SA1797
Q	4002	Transistor	2SC2812
Q	4003	Transistor	2SA1179
Q	4004	Transistor	2SA1576
Q	4005	Transistor	DTC124EU
D	4001	Diode	SC802-06
L	4001	Choke Coil 220µH	CTH1164
L	4002	Choke Coil 220µH	CTH1164
L	4003	Choke Coil 220µH	CTH1164

RESISTORS

R	4001		RS1/10S122J
R	4002		RS1/10S473J
R	4003		RS1/4S681J
R	4004		RS1/10S101J
R	4005	(RN1/10SE3302D)	GGC1319
R	4006	(RN1/10SE1202D)	GGC1269
R	4007		RS1/10S104J
R	4008	(RN1/10SE6201D)	GGC1324
R	4009		RS1/10S223J
R	4010		RS1/10S223J
R	4011		RS1/10S101J
R	4012	(RN1/10SE1002D)	GGC1320
R	4013	(RN1/10SE1002D)	GGC1320
R	4016		RS1/10S754J
R	4017	(RN1/10SE9101D)	GGC1321

=====Circuit Symbol and No.===Part Name		Part No.
R	4018	(RN1/10SE1502D)	GGC1322
R	4019	(RN1/10SE3002D)	GGC1323

CAPACITORS

C	4001	33µF/25V	CCH1249
C	4002		CKSQYB102K50
C	4003	33µF/25V	CCH1249
C	4004		CCSQCH101J50
C	4005		CKSQYB102K50
C	4006	33µF/25V	CCH1249
C	4008	33µF/25V	CCH1249
C	4009		CKSQYB102K50
C	4010		CKSQYB102K50
C	4011		CKSQYF105Z16
C	4012		CCSQCH221J50
C	4013		CKSQYB104K25
C	4014		CKSQYB102K50

High Out Unit
Consists of
   D/D Converter PCB
   High Out PCB

E **H** Unit Number : CWX2215(DEX-P99R/EW)
Unit Name   : High Out Unit

MISCELLANEOUS

IC	4151	IC	NJM4580M
IC	4251	IC	NJM4580M
IC	4351	IC	NJM4580M
Q	4151	Transistor	IMX9
Q	4251	Transistor	IMX9
Q	4351	Transistor	IMX9
		D/D Converter Unit	CWM4358

RESISTORS

R	4153		RSK1/10S103J
R	4154		RSK1/10S103J
R	4155		RSK1/10S153J
R	4156		RSK1/10S153J
R	4157		RSK1/10S680J
R	4158		RSK1/10S680J
R	4159		RS1/10S223J
R	4160		RS1/10S223J
R	4161		RS1/10S222J
R	4162		RS1/10S222J
R	4163		RS1/10S103J
R	4253		RSK1/10S103J
R	4254		RSK1/10S103J
R	4255		RSK1/10S163J
R	4256		RSK1/10S163J
R	4257		RSK1/10S680J
R	4258		RSK1/10S680J
R	4259		RS1/10S223J
R	4260		RS1/10S223J
R	4261		RS1/10S222J
R	4262		RS1/10S222J
R	4353		RSK1/10S103J
R	4354		RSK1/10S103J
R	4355		RSK1/10S153J
R	4356		RSK1/10S153J
R	4357		RSK1/10S680J
R	4358		RSK1/10S680J
R	4359		RS1/10S223J
R	4360		RS1/10S223J
R	4361		RS1/10S222J
R	4362		RS1/10S222J

DEH-P945R,DEX-P99R

=====Circuit Symbol and No.===Part Name   Part No.
---   ------   -------------------------------------   ------------------------

CAPACITORS

C	4151		CEWAR100M50
C	4152		CKSQYB471K50
C	4153		CEWAR100M50
C	4154		CEWAR100M50
C	4157		CCSQCH820J50
C	4158		CCSQCH820J50
C	4253		CEWAR100M50
C	4254		CEWAR100M50
C	4257		CCSQCH820J50
C	4258		CCSQCH820J50
C	4353		CEWAR100M50
C	4354		CEWAR100M50
C	4357		CCSQCH820J50
C	4358		CCSQCH820J50

I   Unit Number : CWX2191
     Unit Name   : Mechanism FPC Unit

MISCELLANEOUS

D	1	LED	CL200IRX
D	2	LED	CL200IRX
D	3	LED	CL200IRX
S	1	Spring Switch(CLAMP)	CSN1033
S	2	Spring Switch(HOME)	CSN1033

RESISTORS

R	1		RS1/8S0R0J
R	2		RS1/8S0R0J
R	3		RS1/8S751J
R	4		RS1/8S751J
R	5		RS1/8S751J

J   Unit Number : CWX2190
     Unit Name   : Photo FPC Unit

P	1	Photo-transistor	CPT-230S-X
P	2	Photo-transistor	CPT-230S-X
P	3	Photo-transistor	CPT-230S-X

Miscellaneous Parts List

		Pickup Unit(Service)	CXX1290
M	1	CRG Motor Assy(Carriage)	CXB1670
M	2	LOAD Motor Unit(Loading)	CXB1684
M	3	Motor(Spindle)	CXM1129
M	851	Motor	CXM1085

6. ADJUSTMENT

6.1 TUNER ADJUSTMENT

● **Connection Diagram**

BACK UP

ACC

GND

+14.4V

GND

DC Regulated
Power Supply

Lch +

Lch -

4 Ω

Rch +

4 Ω

Rch -

mV Meter (1)

Oscilloscope

Dummy Antenna

Antenna Plug

50 Ω(37.5 Ω)

50 Ω(75 Ω)

FM SSG

Stereo
Modulator

Antenna Jack

TUNER AMP UNIT

FM/AM TUNER UNIT

FM/AM TUNER UNIT (TOP VIEW)

L2

Pin26

Pin 19

DC V
Meter(1)

L4

T31

Pin14

L5

Pin13

VR154

T51

Pin1

FM/AM TUNER UNIT (BOTTOM VIEW)

T51

Center
Meter

C63

FM ADJUSTMENT

Modulation   M:MONO MOD., 400Hz 30%(22.5kHz Dev.)
              S:STEREO MOD., 1kHz, L or R=30%(20.25kHz+7.5kHz Dev.)

NOTE:Before proceeding to further adjustments after switching power ON, let the tuner run for ten minutes to allow
     the circuits to stabilize.

| | No. | FM SSG | | Displayed | Adjustment | Adjustment Method |
		Frequency(MHz)	Level(dBf)	Frequency(MHz)	Point	(Switch Position)
TUN Volt	1	•••••	•••••	108.0	L5	DC V Meter(1) : 6V
IF	1	98.1 M	60	98.1	T51	Center Meter : 0
ANT Coil	1	98.1 M	5	98.1	L2	mV Meter(1) : Maximum
RF Coil	1	98.1 M	5	98.1	L4	mV Meter(1) : Maximum
IFT	1	98.1 M	5	98.1	T31	mV Meter(1) : Maximum (STEREO MODE)
ARC	1	98.1 S	39	98.1	VR154	mV Meter(1) : Separation 5dB (STEREO MODE)

FM RDS SL VOLTAGE ADJUSTMENT, INSPECTION AND CONFIRMATION

No.	Standard	Measurement Point	Adjustment Point	Conditions
1	Adjustment1.75+0.05[V] standard −0.35[V] Inspection +0.15[V] standard -0.45[V]	SL1 or SL2	VR551	FM:104.0 MHz ST:Single channel should modulate by 60% f:400 Hz RF:Input 35 dBf
2	Confirm display of FMSL voltage (in TUN Test Mode) The upper (left) two digits of the 8 digits displayed next to frequency in the rotary display (in Service Mode) should be 09 to 0B			

6.2 KEYBDOARD UNIT ADJUSTMENT

● ADJUSTMENT OF VISUAL-FIELD ANGLE OF THE KEYBOARD UNIT

No.	Standard	Measurement Point	Adjustment Point	Conditions
1	Adjustment standard -0.10[V]	-2.5+0.10[V] or TP14	IC1904-6pin	VR1902 SW VDD supply voltage 5[V]
	Inspection +0.15[V] standard -0.15[V]	IC1905-6pin - or TP15	VR1901	

6.3 CHECKING THE GRATING AFTER CHANGING THE PICKUP UNIT

• **Note :**
Unlike previous CD mechanism modules the grating angle of the PU unit cannot be adjusted after the PU unit is changed. The PU unit in the CD mechanism module is adjusted on the production line to match the CD mechanism module and is thus the best adjusted PU unit for the CD mechanism module. Changing the PU unit is thus best considered as a last resort. However, if the PU unit must be changed, the grating should be checked using the procedure below.

• **Purpose :**
To check that the grating is within an acceptable range.

• **Symptoms of Mal-adjustment :**
If the grating is off by a large amount symptoms such as being unable to close tracking, being unable to perform track search operations, or track searching taking a long time, may appear.

• **Method :**
• Measuring Equipment   • Oscilloscope, Two L.P.F.
• Measuring Points   • E, F, REFOUT
• Disc   • ABEX TCD-784
• Mode   • TEST MODE
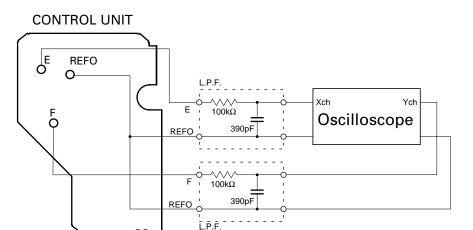
CONTROL UNIT

• **Checking Procedure**
1. In test mode, load the disc and switch the 5V regulator on.
2. Using the **TR+** and **TR-** buttons, move the PU unit to the innermost track.
3. Press key **3** to close focus, the display should read "91". Press key **2** to implement the tracking balance adjustment the display should now read "81". Press key **3** 4 times. The display will change, returning to "81" on the fourth press.
4. As shown in the diagram above, monitor the LPF outputs using the oscilloscope and check that the phase difference is within 75° . Refer to the photographs supplied to determine the phase angle.
5. If the phase difference is determined to be greater than 75° try changing the PU unit to see if there is any improvement. If, after trying this a number of times, the grating angle does not become less than 75° then the mechanism should be judged to be at fault.

• **Note**
Because of eccentricity in the disc and a slight misalignment of the clamping center the grating waveform may be seen to "wobble" (the phase difference changes as the disc rotates). The angle specified above indicates the average angle.
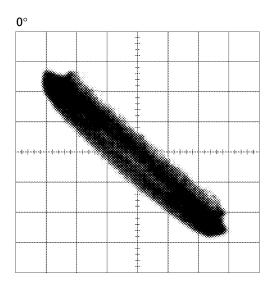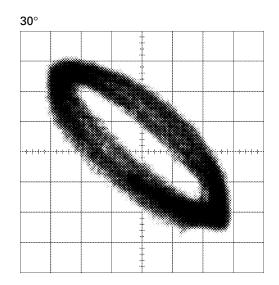
• **Hint**
Reloading the disc changes the clamp position and may decrease the "wobble".
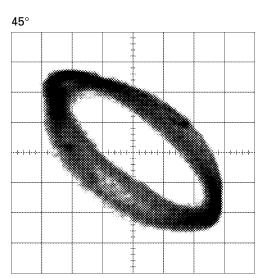
DEH-P945R,DEX-P99R

Grating waveform
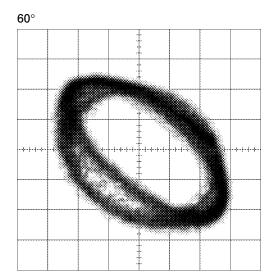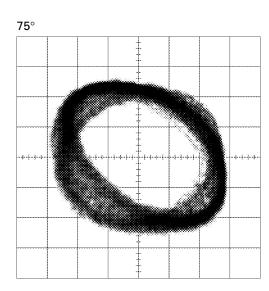
Ech → Xch 20mV/div, AC
Fch → Ych 20mV/div, AC

0°

30°

45°

60°

75°

90°
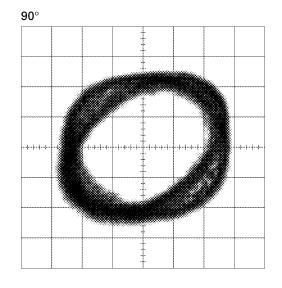
7. GENERAL INFORMATION

7.1 PARTS

7.1.1 IC

UPD63702AGF	PD4931A	GGC1325(M5M51016BTP-70LL)
BA6797FM	PD0236AM	TC7S08FU
LC89170M	PD6237B	AK4321VF
BA05SFP	SED1540F0A	PM0017AM
LB1930M	SED1526F0A	NJM4580M
PM2007A	PD5445A	
PD4905A	AK7712AVT	
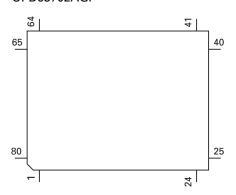
● **Pin Functions (UPD63702AGF)**

Pin No.	Pin Name	I/O	Function and Operation
1	D.VDD		Supplies current of positive voltage to the logic circuits
2	$\overline{RST}$	I	System reset input pin
3	AO	I	Microcomputer interface AO="L": $\overline{STB}$ active and set to address register AO="H": $\overline{STB}$ active and set to parameter
4	$\overline{STB}$	I	Signal to latch serial data within the LSI
5	$\overline{SCK}$	I	Clock input pin to input and output serial data
6	SO	O	Outputs serial data and status signal
7	SI	I	Serial data input pin
8	D.GND		Logic circuit GND
9	X.GND		Crystal oscillation circuit GND
10	XTAL	I	Crystal oscillator connection pin
11	$\overline{XTAL}$	O	Crystal oscillator connection pin
12	X.VDD		Supplies current of positive voltage to the crystal oscillation circuit
13	DA.VDD		Supplies current of positive voltage to the D/A converter
14	R+	O	Right channel analog audio data output pin
15	R-	O	Right channel analog audio data output pin
16,17	DA.GND		D/A converter GND
18	L-	O	Left channel analog audio data output pin
19	L+	O	Left channel analog audio data output pin
20	DA.VDD		Supplies current of positive voltage to the D/A converter
21	D.VDD		Supplies current of positive voltage to logic circuit
22	FLAG	O	Flag output pin to indicate that audio data currently being output consists of noncorrectable data
23	WDCK	O	Pin to output double the frequency of LRCK
24	C16M	O	Pin to output the clock
25	EMPH	O	Output pin for the pre-emphasis data in the sub-Q code
26	DIN	I	Input pin for serial audio data
27	DOUT	O	Output pin for the serial audio data
28	SCKO	O	Output pin for the clock for the serial audio data
29	LRCK	O	Signals to distinguish the right and left channels of the audio data output from DOUT. Frequency is 44.1kHz at 50% duty at normal regeneration
30	TX	O	Output pin for the digital audio interface data
31	CTLV	I	Oscillation control pin for high-frequency clock generation VCO used for the digital PLL upon regeneration at fast speed of 2- or 4-fold
32	POUT	O	Output point for phase comparison
33	D.GND		GND for the logic circuit
34	VCO	I	Input pin for the inverter
35	$\overline{VCO}$	O	Output pin for the inverter
36	D.VDD		Supplies current of positive voltage to the logic circuit
37	PLCK	O	Pin for monitoring the bit clock

Pin No.	Pin Name	I/O	Function and Operation
38	LOCK	O	Indicates "H" when the synchronized pattern detection signal matches the frame counter output at the EFM recovery modulation, and "L" when they don't match
39	WFCK	O	Minute-cycle signal for the bit clock, the signal indicates the cycle of 1 frame (approx. 7.35kHz)
40	RFCK	O	Minute-cycle signal for the clock, the signal indicates cycle of 1 frame (approx. 7.35kHz)
41	D.GND		GND for the logic circuit
42,43	TEST0,1	I	Test pins
44,45	TM2, TM4	I	Pins for controlling regeneration at fast speed of 2- or 4-fold
46-49	T4-T7	I	Test pins
50,51	C1D1, C1D2	O	Output pin for indicating the C1 error correction results
52-54	C2D1-C2D3	O	Output pin for indicating the C2 error correction results
55	D.VDD		Supplies current of positive voltage to the logic circuit
56	SFSY	O	Outputs 1 word of the subcode. Generally, 1 cycle is approx 136 micro seconds
57	SBSY	O	The signal indicates the beginning of the subcode block. The SFSY signal is output at high level every 98 times
58	SBSO	O	Output pin for the subcode data
59	SBCK	I	Input pin for the clock signal for read-out of the subcode data
60	A.GND		GND for the analog circuit
61	MD	O	Output pin for the spindle drive
62	SD	O	Output pin for the sled drive
63	TD	O	Output pin for the tracking drive
64	FD	O	Output pin for the focus drive
65	FBAL	O	Output pin for the focus balance control
66	TBAL	O	Output pin for the tracking balance control
67	A.VDD		Supplies current of positive voltage to the analog circuit
68	TBC	I	Switches coefficient banks for the tracking filter
69	EFM	I	Input pin for the EFM signal
70	HOLD	I	Input pin for the hold control signal
71	RFOK	I	Input pin for the RFOK signal
72	MIRR	I	Input pin for the MIRR signal
73	A.GND		GND for the analog circuit
74	HOME	I	Home position detector input
75	VR1	I	The signal input through these pins is digitized to 8-bit by the A/D converter, which by operation of the assigned register, can be read into the microcomputer
76	FE	I	Inputs a focus-error signal from the RF amplifier
77	TE	I	Inputs a tracking-error signal from the RF amplifier
78	TEC	I	Input pin for the tracking comparator
79	REFOUT	O	Output point for midpoint potential for the A/D converter for the LSI portion
80	A.VDD		Supplies current of accurate voltage to the analog circuit

*UPD63702AGF
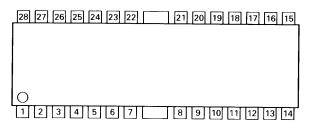
IC's marked by* are MOS type.

Be careful in handling them because they are very liable to be damaged by electrostatic induction.
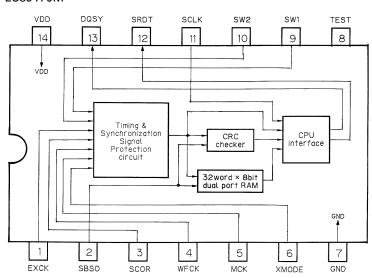
● **Pin Functions (BA6797FM)**
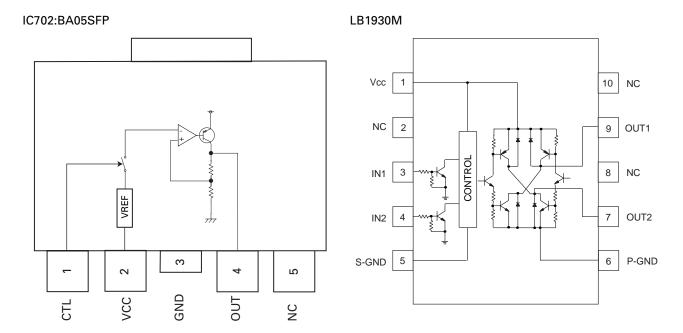
Pin No.	Pin Name	I/O	Function and Operation
1	OUT1-A	O	Driver CH1 output
2	OUT1-B	O	Driver CH1 output
3	PRE-OUT1	O	CH1 pre-amplifier output
4	IN1(-)	I	CH1 pre-amplifier inverted input
5	IN1(+)	I	CH1 pre-amplifier input
6	REG-B	O	External Tr base connection
7	REG-OUT	O	Fixed voltage output (External Tr collect connection)
8	BIAS-IN	I	Bias input
9	MUTE	I	Mute control
10	IN2(+)	I	CH2 pre-amplifier input
11	IN2(-)	I	CH2 pre-amplifier inverted input
12	PRE-OUT2	O	CH2 pre-amplifier output
13	OUT2-B	O	Driver H2 output
14	OUT2-A	O	Driver CH2 output
15	GND		Sub straight GND
16	OUT3-A	O	Driver CH3 output
17	OUT3-B	O	Driver CH3 output
18	PRE-OUT3	O	CH3 pre-amplifier output
19	IN3(-)	O	CH3 pre-amplifier inverted output
20	IN3(+)	O	CH3 pre-amplifier output
21	VCC		VCC
22	VCC		VCC
23	IN4(+)	O	CH4 pre-amplifier output
24	IN4(-)	O	CH4 pre-amplifier inverted output
25	PRE-OUT4	O	CH4 pre-amplifier output
26	OUT4-B	O	Driver CH4 output
27	OUT4-A	O	Driver CH4 output
28	GND		Sub straight GND

BA6797FM

LC89170M

DEH-P945R,DEX-P99R

IC702:BA05SFP
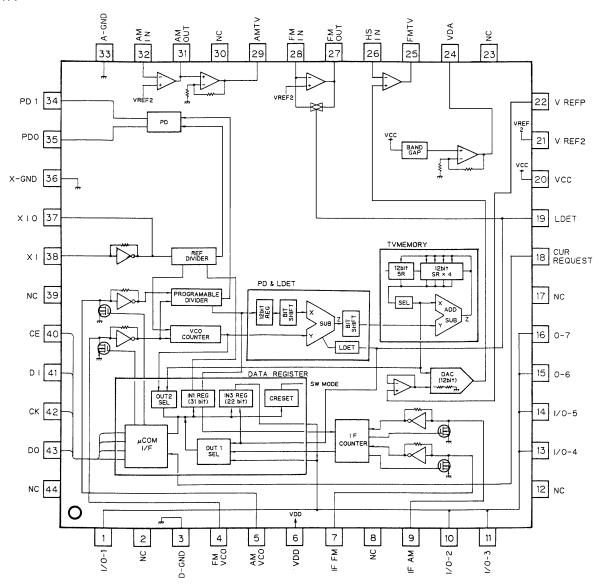
LB1930M

PM2007A
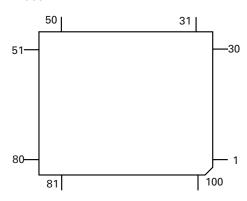
● **Pin Functions (PD4905A)**

Pin No.	Pin Name	I/O	Function and Operation
1	$\overline{\text{SWVDD}}$	O	GRIL:Power Output
2	$\overline{\text{DSENS}}$	I	Detach sense input
3	$\overline{\text{PSENS}}$	I	Grille eject button sense input
4	$\overline{\text{ISENS}}$	I	Illumination sense input
5	TESTIN	I	Test program input
6	$\overline{\text{DRST}}$	O	Reset output
7	NC		Not used
8	$\overline{\text{SK}}$	I/O	SK input
9	RECIVE	I	During decoder receive output
10	NC		Not used
11	$\overline{\text{RESET}}$	I	Reset input
12	XT2		Clock connection pin (OPEN)
13	XT1		Clock connection pin (VSS connection)
14	VSS		GND
15	X2		Main oscillator connection pin
16	X1		Main oscillator connection pin (12.582912MHz)
17	REGOFF		Regulator operation designate signal (VDD connection)
18	REGC		Regulator output sense capacity connection (VDD connection)
19	VDD		Power supply
20	ILMPW	O	Illumination output
21	SYSPW	O	System power control output
22	$\overline{\text{ADPW}}$	O	A/D converter power output
23	LCDPW	O	LCD backlight power output
24	IPPW	O	IPBUS driver power control output
25	ASENBO	O	Slave Acc sense output
26	NC		Not used
27	TELIN	I	TEL mute input
28	MUTE	O	All mute output
29	DIM	O	Dimer output
30	FLPCLS	O	Auto flap motor close output
31	FLPOPN	O	Auto flap motor open output
32	$\overline{\text{FOPNSW}}$	I	Auto flap motor open SW input
33	$\overline{\text{FCLSSW}}$	I	Auto flap motor close SW input
34	FLPPW	O	Auto flap power output
35	NC		Not used
36	$\overline{\text{TMUTE}}$	O	TUNER mute output
37	STDPRO	I	DSP STD/PRO select input
38	SD	I	SD input
39	$\overline{\text{ST}}$	I	Stereo input
40	VSS2		GND
41	VDD2		Power supply
42	$\overline{\text{MDSENS}}$	I	RDS:Demodulation detect input
43	NC		Not used
44	$\overline{\text{RDSLK}}$	I	RDS:LK input
45	$\overline{\text{CURRQ}}$	O	RDS:TUNER voltage FIX output
46	RDT	I	RDS:Data input
47	DRELAY	O	DFS:Extral relay output
48	DRSENS	I	DFS:Door open/close sense input
49	DRSYS	O	DFS:Door system select output
50	$\overline{\text{DLED}}$	O	DFS:Alarm LED output
51	DLSENS	I	DFS:Door lock cancellation sense input
52	STCUT	O	DFS:Ignition cut off output
53	$\overline{\text{MOSENS}}$	I	DFS:Motion/Window damage sensor input
54	DALMON	O	During DFS alarm ON output
55-60	NC		Not used
61	MCSENS	I	Mic sense input
62	PCL	O	Clock adjust output
63	$\overline{\text{BRXEN}}$	I/O	P-BUS:Communication input/output

Pin No.	Pin Name	I/O	Function and Operation
64	$\overline{BSRQC}$	I	P-BUS:Communication request input (CD)
65	$\overline{BSCK}$	I/O	P-BUS:Data clock input/output (Test mode clock output)
66	BSI	I	P-BUS:Communication data input (Test mode data input)
67	BSO	I/O	P-BUS:Communication data output
68	$\overline{BRST}$	O	P-BUS:Reset output
69	MICSEL	O	Mic select output
70	$\overline{BSRQD}$	I	P-BUS:Communication request input (DSP)
71,72	NC		Not used
73	TEST/VPP		IC test pin
74	SL	I	Signal level input (A/D)
75	CL	I	RDS:Synchronizing signal input (A/D)
76	NL	I	RDS:Noise level input (A/D)
77	SEL	I	Destination descrimination input
78	SOR0	O	Source select output 0
79	SOR1	O	Source select output 1
80	ALMSEL	O	DFS alarm select output
81	ADSEL	I	Mic select input
82	AVDD		A/D converter power supply
83	AVREF1		A/D converter standard voltage
84	AVSS		A/D converter GND
85	RX	I	IP-BUS: Data input
86	TX	O	IP-BUS:Data output
87	GND2		Not used
88	$\overline{LDET}$	I	RDS:PLL lock detect input
89	$\overline{RCK}$	I	RDS:RDS clock input
90	RDS57K	I	RDS:57KHz pulse count input
91	NC		Not used
92	$\overline{ASENS}$	I	Acc sense input
93	$\overline{BSENS}$	I	B.up sense input
94	TUNPDI	I	PLL:Data input
95	KEYDT	I	GRIL:Data input
96	DPDT	O	GRIL:Data output
97	TUNPCK	O	PLL:Clock output
98	TUNPDO	O	PLL:Data output
99	TUNPCE	O	PLL:Chip enable output
100	PEE	O	PEE beep output

*PD4905A
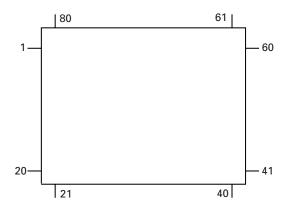
● **Pin Functions (PD4931A)**

Pin No.	Pin Name	I/O	Format	Function and Operation
1	FOK	I		Focus OK input
2	MIRR	I		Mirror detect input
3	LOCK	I		Spindle lock input
4	AVss			A/D GND electric potential
5	NC			Not used
6	EMPH	O	C	Pre-emphasis output
7	AVREF1	I		A/D Reference electric potential input
8	TSI	I		Decode IC serial data input
9	NC			Not used
10	$\overline{\text{TSCK}}$	O	C	Decode IC serial clock output
11	XSI	I		Serial data input from CD LSI
12	XSO	O	C	Serial data output to CD LSI
13	$\overline{\text{XSCK}}$	O	C	Serial clock output to CD LSI
14	XA0	O	C	CD LSI command/data control output
15	$\overline{\text{XSTB}}$	O	C	Strobe output to CD LSI
16	NC			Not used
17	BDATA	I/O	C	P-Bus serial data input/output
18	$\overline{\text{BSCK}}$	I/O	C	P-Bus serial clock input/output
19	$\overline{\text{XRST}}$	O	C	CD LSI reset output
20	CONT	O	C	Servo driver voltage control output
21	CD5VON	O	C	CD +5V power supply control output
22	VDCONT	O	C	VD power supply control output
23	CDMUTE	O	C	CD Mute control output
24	CDEJET	O	C	Loading Motor Eject control output
25	CDLOAD	O	C	Loading Motor Load control output
26	BMUTE	O	C	Bus mute output
27	$\overline{\text{CLAMP}}$	I		Disc clamp SW input
28	$\overline{\text{CRST}}$	O	C	Compressor IC reset output
29	CBANK0	O	C	Compressor IC bank set output 0
30	CBANK1	O	C	Compressor IC bank set output 1
31	CBANK2	O	C	Compressor IC bank set output 2
32	$\overline{\text{CCS}}$	O	C	Compressor IC chip select
33	Vss			GND electric potential
34	DSET	O	C	Disc set indicator light output
35	SCONT	O	C	Spindle double speed output
36-54	NC			Not used
55	ERREJ	I		Disc eject select input at the error
56	$\overline{\text{CSENS}}$	I		Ope-fla close sense input
57	TXARI	I		TX output select input
58	BSRQ	I/O	C	P-Bus service request output
59	BRXEN	I/O	C	P-Bus reception enable status
60	$\overline{\text{RESET}}$	I		System reset input
61	NC			Not used
62	$\overline{\text{BRST}}$	I		P-Bus Reset input
63	$\overline{\text{DQSY}}$	I		TEXT decode read permission input
64-66	NC			Not used
67	$\overline{\text{ADENA}}$	O	C	A/D reference voltage supply control input
68	VDD			Positive power supply
69	X2			Main clock oscillator connection pin
70	X1			Main clock oscillator connection pin
71	IC(Vpp)			Internally Connected (Vss)
72	NC			Not used
73	$\overline{\text{TESTIN}}$	I		Test program start input
74	AVpp			A/D analog power supply
75	AVREF0			A/D reference voltage input
76	EJTENS			Disc eject position sense input
77	DSCSNS			Disc set defect input

Pin No.	Pin Name	I/O	Format	Function and Operation
78	VDSENS	I		VD short sense input
79	TEMP	I		Temperature sense input
80	NC			Not used

Format	Meaning
C	C MOS
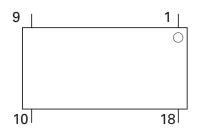
*PD4931A

● **Pin Functions (PD0236AM)**

Pin No.	Pin Name	I/O	Function and Operation
1	BCSEL	I	Bit clock fs select
2	DASEL	I	Bit expand select
3	NC		Not used
4	LRSEL		LRCKO polarity select
5	LRCKO	O	LRCKO output
6	NC		Not used
7	BCKO	O	Bit clock output
8	DATAO	O	Data output
9	GND		GND
10	VDD		Power supply terminal
11	LRCKI	I	LRCKO input
12,13	NC		Not used
14	DATAI	I	Data input
15	BCKI	I	Bit clock input
16	NC		Not used
17	SEL	I	Bit expand/input data output select
18	XRST	I	Reset input
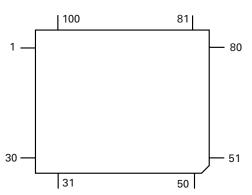
PD0236AM

● **Pin Functions (PD6237B)**

Pin No.	Pin Name	I/O	Format	Function and Operation
1-9	NC			Not used
10	RDX	O	C	Address bus read strobe output
11	VSS	O	C	Digital GND
12	WRX	O	C	Address bus write strobe output
13-18	NC			Not used
19	KYDT	O	C	Key data to system micro-computer
20	DPDT	I		Display data from system micro-computer
21	SCDCLK	I		Test program clock
22	DATAOT	O	C	Test program data
23	Vcc			Digital GND
24	DATAIN	I		Test program data
25,26	NC			Not used
27	C			Reference voltage
28-33	NC			Not used
34	AVcc			Analog power supply
35,36	NC			Not used
37	AVSS			Analog GND
38	ILM1	O	C	Illumination control output 1
39	ILM2	O	C	Illumination control output 2
40,41	NC			Not used
42	GND			Digital GND
43-48	NC			Not used
49	MD0	I		Mode pin 0 (PULL-UP)
50	MD1	I		Mode pin 1 (PULL-UP)
51	MD2	I		Mode pin 2 (PULL-DOWN)
52	HSTX	I		Hardware standby input (PULL-UP)
53	REMIN	I		Remote control pulse input
54-58	NC			Not used
59-62	KST0-KST3	O	C	Key scan output
63,64	NC			Not used
65	RES1	O	C	SED1450 Reset output
66	RES2	O	C	SED1526 Reset output
67-70	KDT0-KDT3	I	C	Key data input
71-73	NC			Not used
74	OSCK4K	O	C	SED1540 Clock output
75-77	NC			Not used
78	CS1	O	C	SED1526 Top lank chip select output
79	CS2	O	C	SED1526 Bottom lank chip select output
80	CS3	O	C	SED1540 chip select output
81	VSS			Digital GND
82,83	X0,X1			Oscillation circuit
84	Vcc			Digital power supply
85-92	AD00-AD07	I/O	C	External data bus input/output
92	AD07	I/O	C	External data bus input/output
93	A0	O	C	External address output
94-100	NC			Not used

*PD6237B
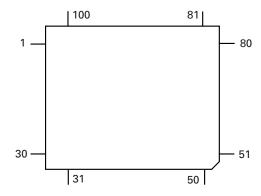
Format	Meaning
C	C MOS
N	N channel open drain

● **Pin Functions (SED1540F0A)**

Pin No.	Pin Name	I/O	Function and Operation
1-72	SEG71-0	O	Output for driving segment of LC
73	A0	I	Normally the lowest bit in the address bus of MPU is connected to distinguish between data and command.
74,75	OSC1,2		Terminal to connect resistor for internal oscillation
76	E($\overline{RD}$)	I	Enable clock input terminal of 68-system MPU Terminal to connect RD signal of 80-system MPU. While this signal is set to "L," data bus of SED1540 will be output.
77	R/$\overline{W}$($\overline{WR}$)	I	Input terminal of read/write control signal Terminal to connect write signal of 80-system MPU
78	VSS		0V connect to system GND
79-86	DB0-7		8-bit duplex data bus to be connected to a data bus of 8-bit or 16-bit standard MPU
87	VDD		Connect to +5V power supply VDD
88	$\overline{RES}$		Can be set to initial setting by setting RES to "L" when using 68-system MPU, or by setting RES to "H" when using 80-system MPU.
89	FR	I/O	Input/output terminal of LC alternating signal
90	V3		Multilevel power supply for driving LC
91	$\overline{CS}$	I	Chip select signal. Normally, signal obtained by decoding address bus signal is input.
92	NC		Not used
93	M/S		Terminal to select between master and slave operation to SED1540. Connect to VDD or VSS.
94,95	V2,1		Multilevel power supply for driving LC
96-99	COM0-3	O	Output for LC common (low) driving
100	SEG72	I/O	Output for driving segment of LC
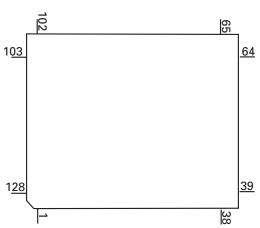
SED1540F0A

● **Pin Functions (SED1526F0A)**

Pin No.	Pin Name	I/O	Function and Operation
1-5	V1-V5		Multilevel power supply for driving LCD
6	VR	I	Voltage adjustment
7	VDD		+5V power supply
8	VOUT	O	Ascending voltage output
9	CAP2-	O	Ascending voltage capacitor connection
10	CAP2+	O	Not used
11	CAP1-	O	Ascending voltage capacitor connection
12	CAP1+	O	Ascending voltage capacitor connection
13	VSS		GND
14	M/S	I	IC master/slave operation select
15	SR2	I	MPU interface select, Parallel/serial data input select, Reset input select
16	SR1	I	MPU interface select, Parallel/serial data input select, Reset input select
17	$\overline{WR}$	I	MPU WR signal connection
18	$\overline{RD}$	I	MPU RD signal connection
19	CS2	I	Chip select signal
20	CS1	I	Chip select signal
21	A0	I	Data/command discrimination
22	FR	O	Not used
23	CL	O	Not used
24-31	D0-D7	I/O	Serial data bus
32-39	COM0-7	O	Output for LCD common driving
40-48	NC		Not used
49-110	SEG0-61	O	Output for driving segment of LCD
111-128	NC		Not used

SED1526F0A

DEH-P945R,DEX-P99R
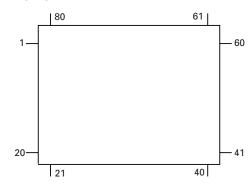
● **Pin Functions (PD5445A)**

Pin No.	Pin Name	I/O	Format	Function and Operation
1	SPCK	I	C	Connect to GND
2	NC			Not used
3	VST	O	C	Electronic volume strobe output
4	VDT	O	C	Electronic volume data output
5	VCK	O	C	Electronic volume clock output
6	CNVss	I		Connect to Vss
7	MCKRQ	I	C	CD unit MCK request input
8	NC			Not used
9	$\overline{\text{RESET}}$	I		Micro-computer hard reset input
10	Xout	O		System clock output
11	Vss	I		GND
12	Xin	I		System clock input
13	Vcc	I		Micro-computer power supply 5V
14	$\overline{\text{NMI}}$	I	C	Connect to Vcc
15	BMUTEIN	I	C	CD unit LR clock supply data
16	SPRQ	I	C	Connect to GND
17	$\overline{\text{BRST}}$	I	C	P-Bus reset input
18	ADTEST	I	C	A.EQ test mode start
19	MICSNS	I	C	A.EQ mic connection data
20	ADSEL	O	C	Signal/A.EQ mic input select
21	MUTERQ	O	C	Hard mute output
22,23	NC			Not used
24	DSPOUT	O	C	DSP serial data output
25	DSPIN	I	C	DSP serial data input
26	DSPCK	O	C	DSP serial clock output
27	NC			Not used
28	BSO	O	C	P-BUS data output
29	BSI	I	C	P-BUS data input
30	BSCK	I/O	C	P-BUS serial clock input/output
31	NC			Not used
32	$\overline{\text{BSRQ}}$	I/O	C	Service request input
33	$\overline{\text{BRXEN}}$	I/O	C	Reception enable input
34,35	DSPERR1	I	C	Connect to GND
36	DZF1	I	C	Front digital 0 data input
37	DZF0	I	C	Rear digital 0 data input
38	DZF2	I	C	Sub woofer digital 0 data input
39	$\overline{\text{TESTIN}}$	I	C	test program start/enable
40	DSPPW	O	C	DSP power supply switching
41	NGO	O	C	Noise gate ON/OFF
42-48	NC			Not used
49	FMUTE	O	C	Not used
50	SWMUTE	O	C	Not used
51	VOICE	I	C	Connect to GND
52-58	NC			Not used
59	IFHIZ	I	C	DSP micro-computer port Hiz set (test mode port)
60	$\overline{\text{DSPRST}}$	O	C	TC9331 hard reset
61	$\overline{\text{PD}}$	O	C	AK7712 power down
62	$\overline{\text{AKRST}}$	O	C	AK7712 reset
63	$\overline{\text{DSPCS2}}$	O	C	AK7712 chip select
64	$\overline{\text{DSPCS1}}$	O	C	TC9331 chip select
65	$\overline{\text{DSPRQ}}$	O	C	AK7712 data output request
66	DSPCD	O	C	TC9331 command/data
67	DSPRDY	I	C	AK7712 data ready
68	$\overline{\text{DSPACK}}$	I	C	DSP data write ready/ACK
69	SMODE	O	C	AK7712 master/slave
70	EMPIN	I	C	CD unit emphasis data input
71	$\overline{\text{EMPOUT}}$	O	C	DAC emphasis output

Pin No.	Pin Name	I/O	Format	Function and Operation
72	LRCKK	O	C	LRCK/BCLK select
73	SDATAK	O	C	Audio data select:LRCKK inverted gate
74	NOISE	I		ASL noise input
75	AVss	I		Connect Vss
76	MCKOUT	O	C	CD MCLK gate control
77	Vref	I		AD select reference voltage input
78	AVcc	I		Connect to Vcc
79	MO/ST	I	C	Connect to GND
80	NC			Not used

*PD5445A
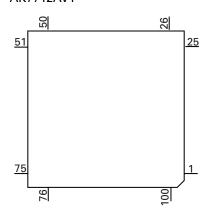
Format	Meaning
C	C MOS

● **Pin Functions (AK7712AVT)**
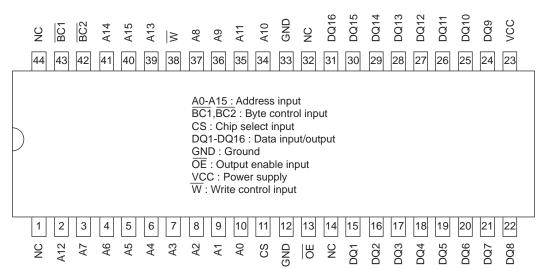
Pin No.	Pin Name	I/O	Function and Operation
1	TSTI1	I	Test input 1
2	OPCL	I	ADC,DAC connection select
3	$\overline{PDAD}$	I	AD reset control
4	$\overline{PDDA}$	I	DA reset control
5	$\overline{PD}$	I	Power down
6	$\overline{RST}$	I	Reset input
7	TSTIO1	I/O	Test input/output 1
8	TSTIO2	I/O	Test input/output 2
9	TSTIO3	I/O	Test input/output 3
10,11	DVB		Digital PCB power supply
12	SDIN2	I	Serial data input 2
13	SDAD	O	Serial data output 2
14	SDOUT2	O	Serial data output 3
15	SDDA	I	Serial data input 3
16	SDDA2	I	Serial data input 4
17	SDOUT3	O	Serial data output 4
18	SDOUT1	O	Serial data output 1
19	SDIN1	I	Serial data input 1
20	SMODE	I	Interface clock select
21	BCLK	I/O	Clock input/output for serial data input signal input/output
22	LRCK	I/O	L/R channel identification signal input/output
23	CLK0	O	Master clock output
24	DVDD		Digital power supply
25	DVSS		Digital GND
26	XTI	I	Clock input
27	XTO	O	Oscillator output
28	TSTI2	I	CLKO output control
29	$\overline{CS}$	I	Chip select input for micro-computer interface
30	$\overline{WRQ}$	I	Command register reset input for micro-computer interface
31	DVSS		Digital GND
32	DVDD		Digital power supply
33	SCLK	I	Serial data input clock input for micro-computer interface
34	SI	I	Serial data input for micro-computer interface
35	WRDY	O	Data write ready output for micro-computer interface
36	DRDY	O	Output data ready output for micro-computer interface
37	SO	O	Serial data output for micro-computer interface
38	$\overline{CASRF}$	O	External DRAM CAS/pseudo SRAM refresh
39	$\overline{RASCE}$	O	External DRAM RAS/pseudo SRAM-ce
40	$\overline{WE}$	O	External SRAM/pseudo SRAM/DRAM write signal output
41-48	A16-A9	O	External RAM address output
49	DVSS		Digital GND
50	DVDD		Digital power supply
51-59	A8-A0	O	External RAM address output
60	$\overline{OE}$	O	External SRAM/pseudo SRAM/DRAM output enable signal output
61-68	IO0-IO7	I/O	External RAM data input/output
69	DVSS		Digital GND
70	DVDD		Digital power supply
71	DZFSET	I	Zero position detect setup
72	DVSS		Digital GND
73	DVDD		Digital power supply
74,75	DVB		Digital PCB power supply
76	DZF2	O	Zero input detect (DAC2)
77	DZF1	O	Zero input detect (DAC1)
78	NC		Not used
79	AVB		Analog PCB power supply
80	AOUTR2	O	DAC2 Rch analog output 2
81	AOUTL2	O	DAC2 Lch analog output 2
82	NC		Not used

Pin No.	Pin Name	I/O	Function and Operation
83	AOUTR1	O	DAC1 Rch analog output 1
84	AOUTL1	O	DAC1 Lch analog output 1
85	VRDAL	I	DAC reference voltage input
86	AVSS		Analog GND
87	AVDD		Analog power supply
88	VRDAH	I	DAC reference voltage input
89	NC		Not used
90	AINR-	I	ADC Rch analog inverted input
91	AINR+	I	ADC Rch analog input
92	AINL-	I	ADC Lch analog inverted input
93	AINL+	I	ADC Lch analog input
94	VCOM	O	Common voltage
95	VRADL	I	ADC reference voltage input
96	AVSS		Analog GND
97	AVDD		Analog power supply
98	VRADH	I	ADC reference voltage input
99	AVB		Analog PCB power supply
100	NC		Not used
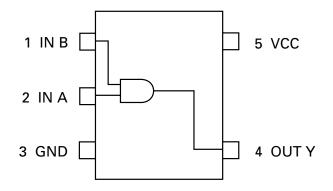
AK7712AVT

GGC1325(M5M51016BTP-70LL)

A0-A15 : Address input
$\overline{BC1},\overline{BC2}$: Byte control input
CS : Chip select input
DQ1-DQ16 : Data input/output
GND : Ground
$\overline{OE}$: Output enable input
VCC : Power supply
$\overline{W}$: Write control input

TC7S08FU

1 IN B		5 VCC
2 IN A		
3 GND		4 OUT Y
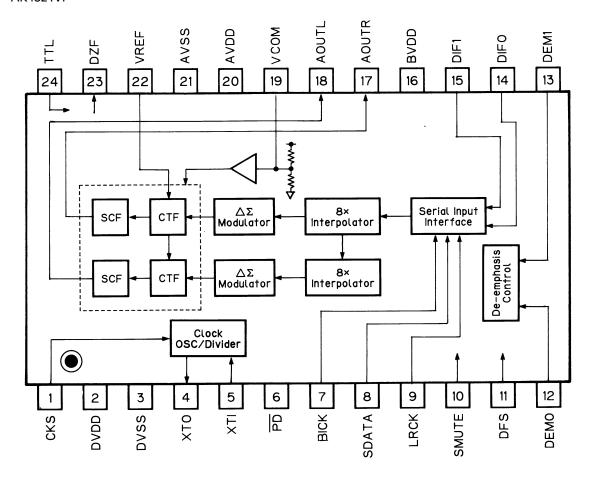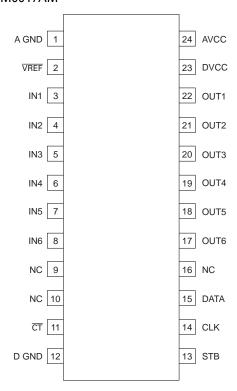
AK4321VF
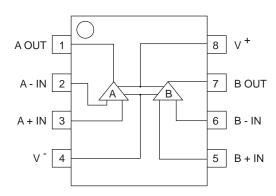
● **Pin Functions (PM0017AM)**

Pin No.	Pin Name	Function and Operation
1	AGND	Analog GND
2	$\overline{\text{VREF}}$	Reference voltage noise cut
3-8	IN1-6	CH1-6 input
9,10	NC	Not used
11	$\overline{\text{CT}}$	Terminal to set forced switching time
12	DGND	Digital GND
13	STB	Strobe input
14	CLK	Clock input
15	DATA	Data input
16	NC	Not used
17-22	OUT6-1	CH6-1 output
23	DVCC	Digital GND
24	AVCC	Analog GND

PM0017AM

A GND	1
$\overline{\text{VREF}}$	2
IN1	3
IN2	4
IN3	5
IN4	6
IN5	7
IN6	8
NC	9
NC	10
$\overline{\text{CT}}$	11
D GND	12

24	AVCC
23	DVCC
22	OUT1
21	OUT2
20	OUT3
19	OUT4
18	OUT5
17	OUT6
16	NC
15	DATA
14	CLK
13	STB

NJM4580M

A OUT	1		8	V^+
A - IN	2	A	7	B OUT
A + IN	3	B	6	B - IN
V^-	4		5	B + IN

DEH-P945R,DEX-P99R
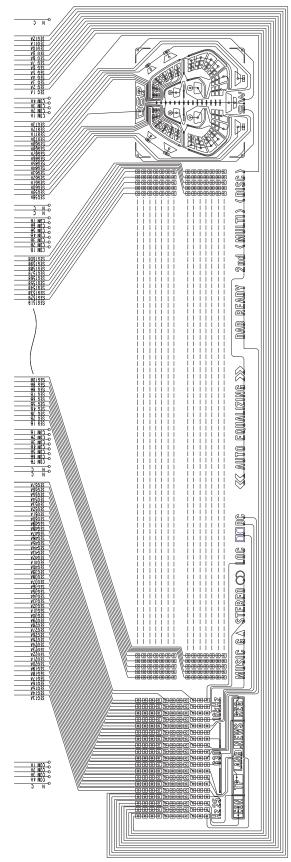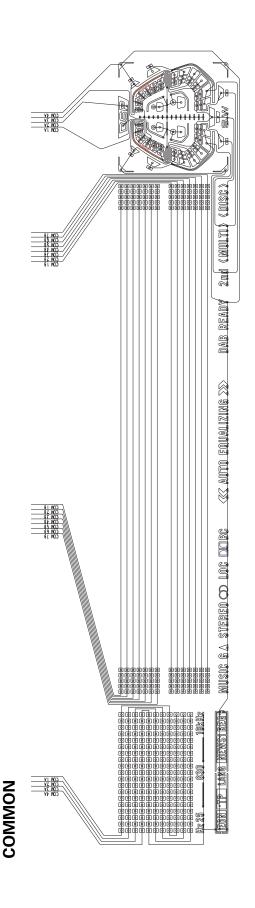
7.1.2 DISPLAY

● **CAW1471 (DEH-P945R/EW)**

● **CAW1493 (DEX-P99R/EW)**

SEGMENT

COMMON
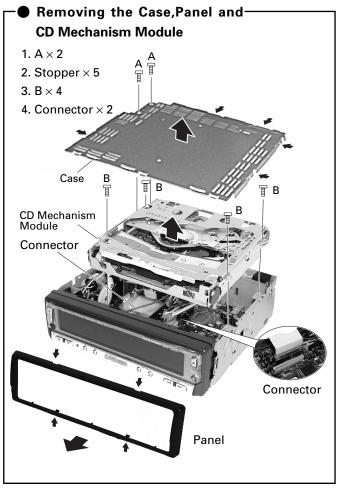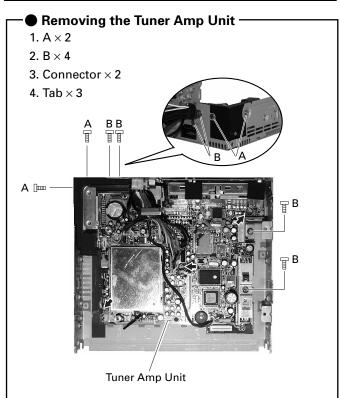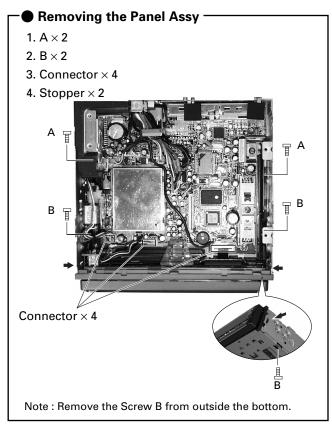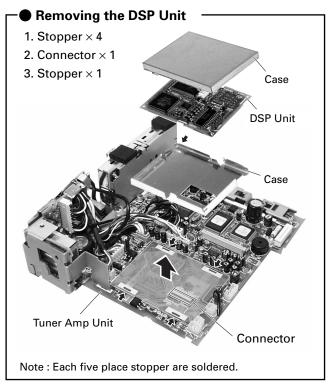
7.2 DIAGNOSIS

7.2.1 DISASSEMBLY

● **Removing the Case,Panel and CD Mechanism Module**

1. A × 2
2. Stopper × 5
3. B × 4
4. Connector × 2

Case

CD Mechanism Module

Connector

Connector

Panel

● **Removing the Panel Assy**

1. A × 2
2. B × 2
3. Connector × 4
4. Stopper × 2

Connector × 4

Note : Remove the Screw B from outside the bottom.

● **Removing the DSP Unit**

1. Stopper × 4
2. Connector × 1
3. Stopper × 1

Case

DSP Unit

Case

Tuner Amp Unit

Connector

Note : Each five place stopper are soldered.

● **Removing the Tuner Amp Unit**

1. A × 2
2. B × 4
3. Connector × 2
4. Tab × 3

Tuner Amp Unit

7.2.2 TEST MODE

● CD Test Mode

1)Precautions

• This unit uses a single power supply (+5V) for the regulator. The signal reference potential, therefore, is connected to REFO(approx. 2.5V) instead of GND.
If REFO and GND are connected to each other by mistake during adjustments, not only will it be impossible to measure the potential correctly, but the servo will malfunction and a severe shock will be applied to the pick-up. To avoid this, take special note of the following.
Do not connect the negative probe of the measuring equipment to REFO and GND together. It is especially important not to connect the channel 1 negative probe of the oscilloscope to REFO with the channel 2 negative probe connected to GND.
Since the frame of the measuring instrument is usually at the same potential as the negative probe, change the frame of the measuring instrument to floating status.
If by accident REFO comes in contact with GND, immediately switch the regulator or power OFF.

• Always make sure the regulator is OFF when connecting and disconnecting the various filters and wiring required for measurements.

• Before proceeding to further adjustments and measurements after switching regulator ON, let the player run for about one minute to allow the circuits to stabilize.

• Since the protective systems in the unit's software are rendered inoperative in test mode, be very careful to avoid mechanical and /or electrical shocks to the system when making adjustment.

• Test mode starting procedure
Switch ACC, back-up ON while pressing the **TA** and **TR–** keys together.

• Test mode cancellation
Switch ACC, back-up OFF.

• Disc detection during loading and eject operations is performed by means of a photo transistor in this unit.Consequently, if the inside of the unit is exposed to a strong light source when the outer casing is removed for repairs or adjustment, the following malfunctions may occur.
*During PLAY, even if the eject button is pressed,the disc will not be ejected and the unit will remain in the PLAY mode.
*The unit will not load a disc.
When the unit malfunctions this way, either re-position the light source, move the unit or cover the photo transistor.

• When loading and unloading discs during adjustment procedures, always wait for the disc to be properly clamped or ejected before pressing another key. Otherwise, there is a risk of the actuator being destroyed.

• Turn power off when pressing the button TR+ or the button TR- key for focus search in the test mode. (Or else lens may stick and the actuator may be damaged.)

• SINGLE/4TRK/10TRK/32TRK will continue to operate even after the key is released.Tracking is closed the moment C-MOVE is released.

• JUMP MODE resets to SINGLE as soon as power is switched OFF.

● S-MD Test Mode

This mode is used by service personnel to solve problems when the mechanism is malfunctioned. Normally users do not enter S-MD Test mode.

(1) Test mode input
1) How to input
   Input in the same manner as with inputting in Test mode of CDS, CDM, etc.

   To enter Test mode, reset the system and set ACC to ON or connect the detach grill, then press xx and xx keys (see CD) simultaneously. Then, use the SOURCE key (or TAPE or SOURCE key on the remote control unit) to activate MDS source, and input in MDS Test mode.

   Normally, the system does not change to MDS source when no disc is loaded. In Test mode, the system changes to MDS source without a disc loaded, and enters Test mode.

2) Beep sound
   • With '97 autumn or later models, the system beeps to confirm that the system has entered Test mode.

(2) Canceling Test mode
1) Internal MDS (P-BUS)
   • With '97 autumn or later models, reset the system, set ACC to OFF, BACKUP to OFF, or disconnect the detach grill to cancel Test mode. (Set ctestf to 0 if Clear RAM is called as preprocessing of standby.)
2) Slave MDS (IP-BUS)
   In addition to the method mentioned in 1), Slave MDS must be reset, too.
(3) Effective keys in Test mode
   In Test mode, some keys require special key decoding.
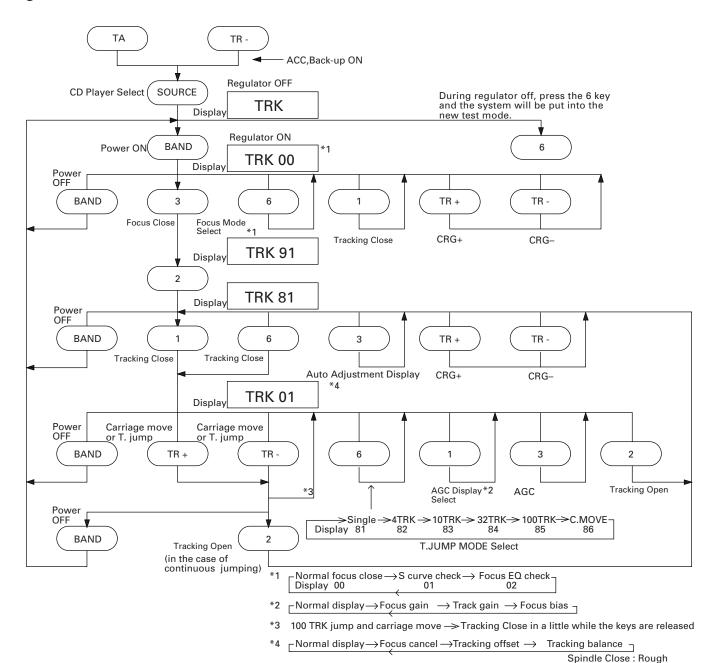
Key name	Key operation
BAND	To turn the POWER ON/OFF
→	To move thread, jump, change set values, etc
←	To move thread, jump, change set values, etc
▲	To advance MENU
▼	To reverse MENU
PGM	To enter Test STOP mode
FUNCTION	To select a MENU
DISP	SRV mode (To change the disc type.)

Keys not provided on the main unit can be found on the remote control unit.
Operation specifications and details are in accordance with the specifications of MDS.

DEH-P945R,DEX-P99R

● Flow Chart

Flow chart components (text labels):

- TA
- TR -
- ACC,Back-up ON
- CD Player Select — SOURCE
- Regulator OFF — Display — TRK
- During regulator off, press the 6 key and the system will be put into the new test mode.
- Power ON — BAND — Regulator ON — Display — TRK 00 *1
- 6
- Power OFF — BAND — 3 — 6 — 1 — TR + — TR -
- Focus Close — Focus Mode Select *1 — Tracking Close — CRG+ — CRG−
- Display — TRK 91
- 2
- Display — TRK 81
- Power OFF — BAND — 1 — 6 — 3 — TR + — TR -
- Tracking Close — Tracking Close — Auto Adjustment Display *4 — CRG+ — CRG−
- Display — TRK 01
- Power OFF — BAND — TR + — TR - — 6 — 1 — 3 — 2
- Carriage move or T. jump — Carriage move or T. jump — AGC Display *2 Select — AGC — Tracking Open
- *3
- Power OFF — BAND — 2
- Tracking Open (in the case of continuous jumping)
- Display: Single →4TRK →10TRK →32TRK →100TRK →C.MOVE : 81 82 83 84 85 86
- T.JUMP MODE Select

*1 Normal focus close → S curve check → Focus EQ check
Display 00 01 02

*2 Normal display → Focus gain → Track gain → Focus bias

*3 100 TRK jump and carriage move → Tracking Close in a little while the keys are released

*4 Normal display → Focus cancel → Tracking offset → Tracking balance
Spindle Close : Rough

● SYSTEM Test Mode

Function	Operation Key · Trigger	Remarks	Display
Display Test Mode	Set Acc to ON or connect the detach grille, while pressing the S/A and → keys simultaneously. Then, press the S/A and → keys simultaneously, while the source is ON. To cancel Display Test Mode, press the Reset button.	Immediately after resetting the system	All LCDs light up.
TEST MODE	Set ACC to ON or connect the detach grille, while pressing the TA and ← keys simultaneously. To cancel Test Mode, set ACC to OFF or press the Reset button.	Immediately after resetting the system	

● **Error Number Indication**

The system enters error mode to display the cause of error with a number when the system cannot operate CD or stops operation because of an error. The purpose of this measure is to reduce frequency of calls from users asking help for problems that are caused by incorrect operation by user, as well as to assist analysis and repair in servicing.

(1) Basic means of display

• An error code will be written on DMIN (minute area for display) and DSEC (second area for display) when CSMOD (CD mode area for system) is SERBORM.

The same data will be written on DMIN and DSEC.

DTNO shall be blank as before.

• Display examples of the head unit

Error codes will be displayed as shown below, depending on the capability of LCD. An error number will be displayed in the place of "xx."

• 8-digit display   ERROR-XX
• 6-digit display   ERR-XX or Err-XX
• 4-digit display   E-XX

With OEM products, display of error codes shall be according to the specificatins of the manufacturer.

(2) Error codes

Error code	Classification	Description	Cause / Detail
10	ELECTRIC	Carriage home failure	Carriage doesn't move to or from the innermost position →Home switch failed and/or carriage immobile
11	ELECTRIC	Focus failure	Focus failed →Defects, disc upside-down, severe vibration
12	ELECTRIC	SETUP failure Subcode failure	Spindle failed to lock or subcode unreadable →Spindle defective, defect, severe vibration
14	ELECTRIC	Mirror failure	Unrecorded CD-R The disc is upside-down, defects, vibration
17	ELECTRIC	Set up failure	AGC protect failed →Defects, disc upside-down, severe vibration
19	ELECTRIC	Improper T.BAL adjustment	Value of T.BAL adjustment is out of parameter.
30	ELECTRIC	Search time out	Failed to reach target address →Carriage / tracking defective and/or defects
A0	SYSTEM	Power failure	Power overvoltage or short circuit detected →Switching transistor defective and/or power abnormal

(4) Number of error codes

One hundred error codes (00 to 99) will be available.

(5) Remarks

• Error codes are not displayed for the mechanism alone (because CD is OFF when an mechanical error is generated).

• When the system cannot read TOC, it is not deemed as an error, and the system continues operation to a certain extent.

• Be sure to take measures as shown in the display examples whenever designing a new head unit.

• The first digit of an error code has a meaning as follows:

    1X : Error related to setup
    3X : Error related to the search function
    AX : Other errors

● **New Test Mode**

When S-CD is specified as the source, basically the system plays as normal operation. After setup, the system displays the cause and time (absolute time) of an error if focus search is improper, spindle lock is removed, subcode cannot be read, or sound is skipped. During setup, the system displays the operation status of CD control software (internal RAM : CPOINT). The purpose of these displays and functions are to detect aging of servicing, as well as to improve efficiency of defect analysis.

(1) How to enter NEW TEST Mode

1. Reset the system by pressing keys (depending on the product) to enter the conventional Test mode.

2. Select S-CD as the source by pressing the source or CD key, then inserting a disc. Confirm that the regulator is OFF. Press the Switch Jump Mode key.

3. After that, the system will stay in the new Test mode, regardless of whether S-CD is OFF or ON.

To exit from the new Test mode, reset the system.

See the test mode flow chart Page 104.

(2) Relations of keys

keys	Test Mode		New Test Mode	
	Regulator OFF	Regulator ON	PLAY in progress	Error Protection
BAND	To Regulator ON	To Regulator OFF	—	Time / Err No.select
TR+	—	FWD-Kick	FF / TR+	—
TR-	—	REV-Kick	REV / TR-	—
1	—	Tracking Close	Scan	—
2	—	Tracking Open	RPT	—
3	—	Focus Close	RDM	—
—	—	Focus Open	—	—
—	—	Jump Off	—	—
6	To New Test Mode	Jump Mode select	Auto / Manu	T.No. / Time select

Operations, such as EJECT, CD ON/OFF are performed normal mode.
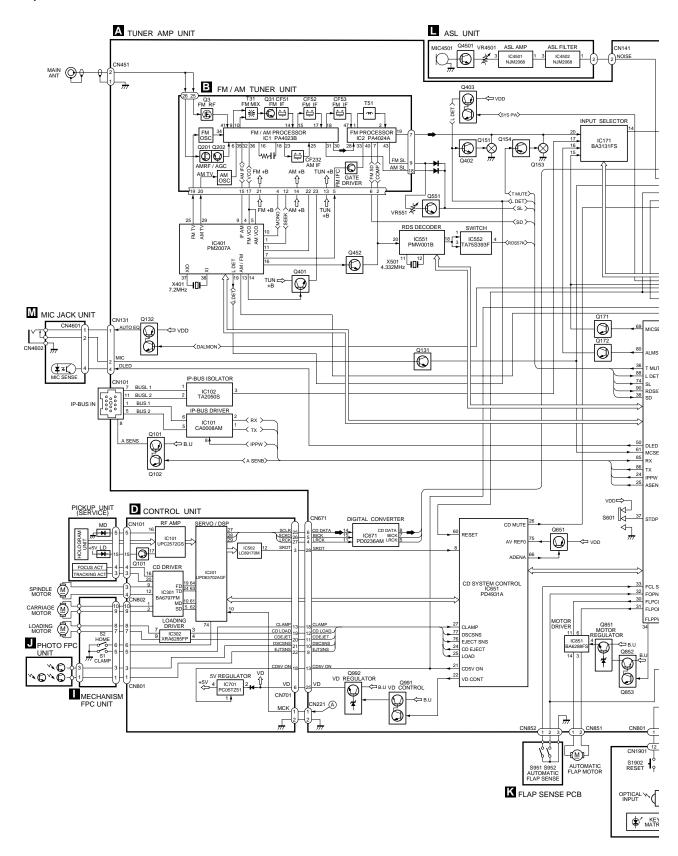
(3) Error Cause, Error Code
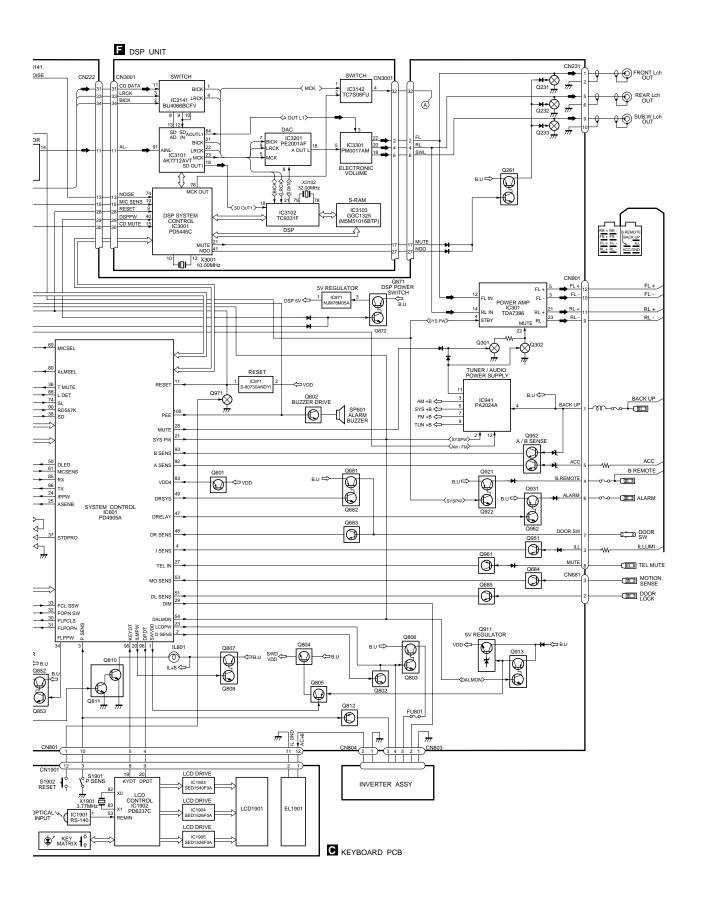
Code	Classification	Description	Cause / Details
40	ELECTRIC	Put out of focus	FOK=Low has continued for 100 msec →Damaged or soiled disc. vibration, or detective servo
41	ELECTRIC	Spindle unlock	LOCK=has continued for 100 msec →Damaged or soiled disc. vibration, or detective servo
42	ELECTRIC	Failed to read subcode	The system could not read subcode for 100 msec →Damaged or soiled disc. vibration, or detective servo
43	ELECTRIC	Sound skipped	The last-address-memory function activated →Damaged or soiled disc. vibration, or detective servo

There will be no mechanical error during aging. Error codes should be displayed in the same manner as in Normal mode.

7.3 BLOCK DIAGRAM

● DEH-P945R/EW

F DSP UNIT

C KEYBOARD PCB

8. OPERATIONS AND SPECIFICATIONS

8.1 OPERATIONS

● **Connection Diagram (DEH-P945R/EW)**

Small inverter units

Black label (LOW/SUBWOOFER OUTPUT)
Green label (HIGH/REAR OUTPUT)
White label (MID/FRONT OUTPUT)

Power amp (sold separately)

Power amp (sold separately)

Power amp (sold separately)

Connecting cords with RCA pin plugs (sold separately)

Use this for connections when you have the separately available amplifier.

Right speaker

Left speaker

PRO: Middle STD: Front

PRO: High STD: Rear

PRO: Low STD: Subwoofer

Blue
Blue
Blue
Blue

Multi-CD player (sold separately)

To system control terminal of the power amp or Auto-antenna relay control terminal. (Max. 300 mA 12 V DC)

Fuse holder

IP-BUS cable

Antenna jack

See the section "RFP Alert Installation".

This Product

Switch the PRO/STD Switch PRO or STD.

White/orange
White/red
Brown
White

Yellow/black
If you use a cellular telephone, connect it via the Audio Mute lead on the cellular telephone. If not, keep the Audio Mute lead free of any connections.

Fuse holder

Fuse holder

Fuse resistor

Fuse resistor

Orange (2*)
To terminal always supplied with power regardless of ignition switch position.

Red (4*)
To electric terminal controlled by ignition switch (12 V DC) ON/OFF.

Yellow
To light switch terminal.

Black (ground)
To vehicle (metal) body.

Blue
To Auto-antenna relay control terminal. (Max. 300 mA 12 V DC.)

PRO:
When connecting to the speaker leads, do not connect the RCA outputs.
When connecting to the RCA outputs, do not connect the speaker leads.

STD	PRO
Front left ⊕	Middle left ⊕
Front left ⊖	Middle left ⊖
Front right ⊕	Middle right ⊕
Front right ⊖	Middle right ⊖
Rear left ⊕	High left ⊕
Rear left ⊖	High left ⊖
Rear right ⊕	High right ⊕
Rear right ⊖	High right ⊖

Speaker leads
Green
Green/black
Gray
Gray/black
Green/red
Black/green
Gray/red
Black/gray

Connect leads of the same color to each other.

Cap (1*)
When not using this terminal, do not remove the cap.

Orange (3*)
Back-up (or accessory)

Red (5*)
Accessory (or Back-up)

1*
2*
4*
3*
5*

Note:
Depending on the kind of vehicle, the function of 3* and 5* may be different. If this is the case, be sure to connect 2* to 5* and 3* to 4*.
When the power cord of a component such as a Multi-CD Player is connected to this unit's power cord, check that 3* and 5* (Back-up or Accessory) are operating correctly, and that connections are correct.

ISO connector
Note:
In some vehicles, the ISO connector may be divided into two. If this is the case, be sure to connect to both connectors.

● Connection Diagram (DEX-P99R/EW)

Use this for connections when you have the separately available amplifier.

Power amp (sold separately)

Power amp (sold separately)

Power amp (sold separately)

Connecting cords with RCA pin plugs (sold separately)

Black label (LOW/SUBWOOFER OUTPUT)

Green label (HIGH/REAR OUTPUT)

White label (MID/FRONT OUTPUT)

Multi-CD player (sold separately)

To system control terminal of the power amp or Auto-antenna relay control terminal. (Max. 300 mA 12 V DC)

Fuse holder

IP-BUS cable

Right speaker

Left speaker

Blue
Blue
Blue
Blue
Blue

PRO: Middle
STD: Front

PRO: High
STD: Rear

PRO: Low
STD: Subwoofer

Small inverter units

This Product

Switch the PRO/STD Switch PRO or STD.

See the section "RFP Alert Installation".

Antenna jack

Fuse holder

Fuse holder

Fuse resistor

Fuse resistor

White/orange

White/red

Brown

White

Yellow/black
If you use a cellular telephone, connect it via the Audio Mute lead on the cellular telephone. If not, keep the Audio Mute lead free of any connections.

Orange
To terminal always supplied with power regardless of ignition switch position.

Red
To electric terminal controlled by ignition switch (12 V DC) ON/OFF.

Yellow
To light switch terminal.

Black (ground)
To vehicle (metal) body.

DEH-P945R,DEX-P99R

Key Finder

Head Unit

OPEN/EJECT button
SOURCE/OFF button
▼/▲ button
◄/► button
DISPLAY button
PTY button
TA button
S/A button
+/– button

Remote Controller

Buttons 1–6
+/– button
DSP button
▼/▲ button
BAND button
FUNCTION button
TUNER/DAB button
AUX button
PGM button
PTY button
◄/► button
DISPLAY button
CD button
ANGLE button
ATT button

Steering Remote Controller

Buttons on the remote controller or head unit with the same name have the same function.

ATT button
BAND button
◄/► button
FUNCTION button
SOURCE/OFF button
▼/▲ button
DSP button

+/– button

Tuner Operation

This product's AF function can be switched ON and OFF. AF should be switched OFF for normal tuning operations.

Basic Operation of Tuner

1. Select Tuner.

Each press changes the Source ...

Each press changes the Source ...

The program service name or frequency appears on the display.

30 FMFM1   87.50 MHz

2. Select the desired band.

30 FMFM1   87.50 MHz

FM1 → FM2 → FM3 → MW/LW
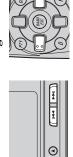
3. Tune the receiver to a higher or lower frequency.

30 FMFM1   100.70 MHz

"STEREO ◯"

This product's tuner lets you select the tuning by changing the length of the time you press the button.

Manual Tuning (step by step)	0.3 seconds or less
Seek Tuning (automatically)	0.3–2 seconds
Manual Tuning (continuously)	2 seconds or more

Note:
- "STEREO ◯" indicator lights when a stereo station is selected.
- To select a weak broadcasting station that cannot be tuned in with the Seek Tuning function, tune in with Manual Tuning.

113

DEH-P945R,DEX-P99R

Tuner Operation

4. Raise or lower the volume.

FM1.
Main Volume 12

5. Turn the source OFF.

Hold for 1 second

Each press
changes the Source ...

Entering the Function Menu

In this menu you can select tuner functions.

• Select the desired mode in the Function Menu.

ON FUNC BSM
OFF

Each press
changes the Mode ...

Each press of the FUNCTION button selects the mode in the following order:

BSM → Regional* → Local → TA* → AF*

* Regional, TA and AF are RDS functions for FM bands. You cannot switch to these modes when selecting MW or LW band. Refer to "Using the RDS Functions" for details and instructions on how to use these functions.

To cancel the Function Menu, press the BAND button.

Note:
• After entering the Function Menu, if you do not perform an operation within about 30 seconds, the Function Menu is automatically canceled.

Local Seek Tuning

This mode selects only stations with especially strong signals.

1. Select the Local mode (Local) in the Function Menu.

2. Switch the Local mode ON or OFF.

FUNC Local 2

"LOC"

3. Select the desired Local Seek sensitivity.

FUNC Local 4

FM   : Local 1 ↔ Local 2 ↔ Local 3 ↔ Local 4
MW/LW : Local 1 ↔ Local 2

Note:
• The "Local 4" setting allows reception of only the strongest stations, while lower settings let you receive progressively weaker stations.

To cancel the Function Menu, press the BAND button.

Using the RDS Functions

What is RDS?

RDS (Radio Data System) is a system for transmitting data along with FM programs. This data, which is inaudible, provides a variety of features such as: program service name, program type display, traffic announcement standby, automatic tuning and program type tuning, intended to aid radio listeners in tuning to a desired station.

Note:
- RDS service may not be provided by all stations.
- RDS functions, like AF (Alternative Frequencies search) and TA (Traffic Announcement standby), are only active when your radio is tuned to RDS stations.

Switching the Frequency Display

This unit displays the names (Program Service Name) of networks/stations providing RDS Services and PTY Information. You can also switch from Program Service Name display to frequency display.

- **When you want to know the frequency of the current station, change the display.**

Each press
changes the Display ...

Note:
- After switching displays, if you do not perform an operation within 8 seconds, the Program Service Name is automatically displayed.

PTY Information

PTY (Program Type ID code) information for the currently tuned station appears on the display.

Frequency

The frequency of the current station appears on the display.

AF Function

The AF (Alternative Frequencies search) function is used to search for other frequencies in the same network as the currently tuned station. It automatically retunes the receiver to another frequency in the network which is broadcasting a stronger signal when there are problems with reception of the currently tuned station or better reception is possible on a different frequency.

Note:
- AF tunes the receiver only to RDS stations when you use Seek tuning or BSM Auto Memory with the AF Function ON.
- When you recall a preset station, the tuner may update the preset station with a new frequency from the station's AF list. (This is only available when using presets on the FM1 band.) No preset number appears on the display if the RDS data for the station received differs from that for the originally stored station.
- Sound may be temporarily interrupted by another program during an AF frequency search.
- When the tuner is tuned to a non-RDS station, the "AF" indicator flashes. (You can confirm by switching to the Status display.)
- AF can be switched ON or OFF independently for each FM band.

Activating/Deactivating the AF Function

AF is set to ON by default.

1. **Select the AF mode (AF) in the Function Menu.**

2. **Activate or deactivate AF while in an FM band.**

To cancel the Function Menu, press the BAND button.

DEH-P945R, DEX-P99R

Using the RDS Functions

PI Seek Function

The tuner searches for another frequency broadcasting the same programming. "Seek" appears on the display and the radio volume is muted during a PI Seek. The muting is discontinued after completion of the PI Seek, whether or not the PI seek was successful. If the PI Seek is unsuccessful, the tuner returns to the previous frequency.

PI Seek

If the tuner fails to locate a suitable alternative frequency or if the broadcasting signal is too weak for proper reception, the PI Seek will automatically start.

Auto PI Seek (for preset station)

When preset stations cannot be recalled, as when traveling long distances, the product can be set to perform PI Seek also during preset recall.
The default setting for Auto PI Seek is OFF.

Note:
• Refer to "Initial Setting" for details on how to switch Auto PI Seek ON/OFF.

Regional Function

When AF is used to retune the tuner automatically, Regional (Regional) limits the selection to stations broadcasting regional programs.

Note:
• Regional programming and regional networks are organized differently depending on the country (i.e., they may change according to the hour, state or broadcast area).
• The preset number may disappear on the display if the tuner tunes in a regional station which differs from the originally set station.

Activating the Regional Function

The Regional function can be turned ON independently for each FM band.

1. **Select the Regional mode (Regional) in the Function Menu.**

2. **Activate or deactivate Regional while in an FM band.**

```
↑ ON FUNC
↓ OFF  Regional :On
          STEREO CD
```
"REG"

To cancel the Function Menu, press the BAND button.

TA Function

The TA (Traffic Announcement standby) function lets you receive traffic announcements automatically, no matter what source (tuner, built-in CD player or multi-CD player) you are listening to. The TA function can be activated for either a TP station (a station that broadcasts traffic information) or an EON TP station (a station carrying information which cross-references TP stations).

Activating/Deactivating the TA Function

1. **Tune in a TP or EON TP station.**

The "TP" indicator lights when the tuner is tuned to a TP station, and both the "EON" and "TP" indicators light when it is tuned to an EON TP station.

```
FM1  Pop Mus
     RADIO3FM
       STEREO CD
```
"TA"

2. **Activate the TA function.**

The "TA" indicator lights, indicating that the tuner is waiting for traffic announcements.

Repeat the preceding operation when no traffic announcement is being received to deactivate the TA function.

Note:
• You can also switch the TA Function ON/OFF in the Function Menu.
• The system switches back to the original source following traffic announcement reception.
• The TA function can be activated from the built-in CD player or multi-CD player mode if the tuner was last set to the FM band but not if it was last set to the MW/LW band.
• If the tuner was last set to FM, turning on the TA function lets you operate other tuning functions while listening to a CD.
• Only TP or EON TP stations are tuned in during the Seek Tuning mode when the "TA" indicator is ON.
• Only TP or EON TP stations are stored by BSM when the "TA" indicator is ON.

116

Using the RDS Functions

Canceling Traffic Announcements

• **Press the TA button while a traffic announcement is being received to cancel the announcement and return to the original source.**

The announcement is canceled but the tuner remains in the TA mode until the TA button is pressed again.

Adjusting the TA Volume

When a traffic announcement begins, the volume adjusts automatically to a preset level to enable you to hear the announcement clearly.

• **Set the volume by adjusting it during reception of a traffic announcement.**

The newly set volume is stored in memory and recalled for subsequent traffic announcements.

TP Alarm Function

About 30 seconds after the "TP" or "EON" indicator is extinguished due to a weak signal, a 5 second beep sounds to remind you to select another TP or EON TP station.

• **If you are listening to the tuner, tune in another TP station or EON TP station.**

In the built-in CD player or multi-CD player mode, the tuner automatically seeks out the TP station with the strongest signal in the current area 10 (or 30)* seconds after "TP" disappears from the display.

* **Time taken before Seek begins.**

TA Function ON	10 seconds
TA, AF Functions ON	30 seconds

PTY Function

With Wide and Narrow classification of program type, the PTY function provides two ways to select stations by the type of program being broadcast (PTY Search). It also provides automatic tuning to emergency broadcasts (PTY Alarm).

Note:
• There's no need to perform PTY Search settings again if they have previously been set. After switching to the PTY Search Setting mode in Step 1, just perform PTY Search in Step 4.

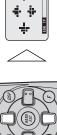## Searching the PTY

1. **Select the PTY Search Setting mode.**

2. **Select the PTY Search method (Wide, Narrow).**

3. **Select one from among the PTY.**

DEH-P945R, DEX-P99R

Using the RDS Functions

4. Start PTY Search.

The tuner searches for a station broadcasting the desired PTY.

To cancel the PTY Search Setting mode, hold down the PTY button for 2 seconds or more.

Note:
- If a PTY code of zero is received from a station, "NONE" will be displayed. This indicates that the station has not defined its program contents.
- If the signal is too weak for this product to pick up the PTY code, "NO PTY" will be displayed.
- The program of some stations may differ from that indicated by the transmitted PTY.
- If no station broadcasting the selected programming type is found, "NOT FOUND" is displayed for about 2 seconds, and the tuner returns to the original station.

News Program Interruption Setting

You can switch automatic reception of PTY code news programs ON/OFF. When a received news program ends, reception of the previous program resumes.

- **Set interruption to ON or OFF.**

Hold for 2 seconds

"NEWS"

PTY Alarm

PTY Alarm is a special PTY code for announcements regarding emergencies such as natural disasters. When the tuner receives the radio alarm code, "ALARM" appears on the display and the volume adjusts to the TA volume. When the station stops broadcasting the emergency announcement, the system returns to the previous source.

Note:
- The system switches back to the original source following emergency announcement reception.

Canceling Emergency Announcements

- **Press the TA button during emergency announcement reception to cancel the announcement and return to the previous source.**

Using the Built-in CD Player

Basic Operation of the Built-in CD Player

The built-in CD player plays one standard 12 cm or 8 cm (single) CD at a time. Do not use an adapter when playing an 8 cm CD.

1. Open the front panel and insert the disc with the label side up.

2. Select the desired track (or fast-forward/reverse, per the chart below).
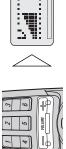

This product's built-in CD player lets you select the Track Search function or Fast-forward/Reverse function by changing the length of time you press the button.

Track Search	0.5 seconds or less
Fast-forward/Reverse	Continue pressing

3. Raise or lower the volume.

Using the RDS Functions

PTY List

Wide	Narrow	Details
News and Inf	News	News.
	Weather	Weather reports/Meteorological information.
	Affairs	Current affairs.
	Sport	Sports programs.
	Finance	Stock market reports, commerce, trading etc.
	Inf	General information and advice.
Popular	Pop Mus	Popular music.
	Rock Mus	Contemporary modern music.
	Easy Mus	Easy listening music.
	Jazz	Jazz music based programs.
	Oldies	Oldies music, 'Golden age' based programs.
	Folk Mus	Folk music based programs.
	Country	Country music based programs.
	Nat Mus	National music based programs.
	Oth Mus	Other types of music, which can't be categorized.
Classics	L. Class	Light classical music.
	Classic	Serious classical music.
Others	Phone In	Phone in based programs.
	Drama	All radio plays and serials.
	Document	Documentary programs.
	Varied	Light entertainment programs.
	Children	Children's programs.
	Touring	Travel programs, not for announcements about traffic problem.
	Leisure	Programs about hobbies and recreational activities.
	Culture	Programs concerned with any aspect of national or regional culture.
	Religion	Religion affairs programs or services.
	Educate	Educational programs.
	Science	Programs about nature, science and technology.
	Social	Social affairs programs.

Using the Built-in CD Player

4. Remove the disc.

Hold for 2 seconds

Be sure to close the front panel after removing the disc.

Note:
- The CD function can be turned ON/OFF with the disc remaining in this product.
- Discs left partially inserted after ejection may incur damage or fall out.
- If a disc cannot be inserted fully or playback fails, make sure the recorded side is down, hold down the OPEN/EJECT button for 2 seconds or more and check the disc for damage before reinserting it.

Switching the Display (only for CD TEXT Discs)

You can use this function when playing a CD TEXT disc.

Note:
- A CD TEXT disc is a CD featuring recorded text information such as Disc Title, Artist Name and Track Title.

Selecting the Display

- **Select the desired display.**

Each press of the DISPLAY button changes the display in the following order:

Disc Title → Artist Name → Track Title

Scrolling the Display

This unit displays the first 10 letters only of Disc Title, Artist Name and Track Title. With text longer than 10 letters, you can see the rest of the text by scrolling.

- **Scroll the display.**

Hold for 2 seconds   Hold for 2 seconds

Note:
- You cannot input a disc title with a CD TEXT disc.

Entering the Function Menu

In this menu you can select built-in CD player functions.

- **Select the desired mode in the Function Menu.**

Each press
changes the Mode …

Each press of the FUNCTION button selects the mode in the following order:

Repeat → Random → Scan → Pause → COMP and DBE

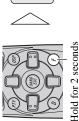To cancel the Function Menu, press the BAND button.

Note:
- After entering the Function Menu, if you do not perform an operation within about 30 seconds, the Function Menu is automatically canceled.

Using the Built-in CD Player

Entering the Detailed Setting Menu

In this menu you can perform Disc Title Input and PGM button settings.

- **Enter the Detailed Setting Menu.**

Hold for 2 seconds

FUNC TitleInput

Each press of the FUNCTION button selects the mode in the following order:

TitleInput* → PGM-key

* During play of a CD TEXT disc, you cannot switch to the "TitleInput" mode.

To cancel the Detailed Setting Menu, press the BAND button.

Note:
- You can cancel the Detailed Setting Menu by pressing the FUNCTION button again for 2 seconds or more.
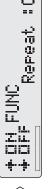
Repeat Play

Repeat Play plays the same track repeatedly.

1. **Select the Repeat mode (Repeat) in the Function Menu.**

2. **Switch the Repeat Play ON or OFF.**

ON FUNC
OFF Repeat :On

To cancel the Function Menu, press the BAND button.

Note:
- If you perform Track Search or Fast-forward/Reverse, Repeat Play is automatically canceled.

Random Play

Random Play plays the tracks on a CD in random order for variety.

1. **Select the Random mode (Random) in the Function Menu.**

2. **Switch the Random Play ON or OFF.**

ON FUNC
OFF Random :On

To cancel the Function Menu, press the BAND button.

Note:
- Since playback is random, the same track may be repeated consecutively.

Scan Play

Scan Play plays the first 10 seconds or so of each track on a CD in succession.

1. **Select the Scan mode (Scan) in the Function Menu.**

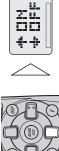2. **Switch the Scan Play ON.**

ON FUNC
OFF Scan :On

3. **When you hear the track you are looking for, cancel Scan Play.**

If the Function Menu is automatically canceled at this time, select the Scan mode in the Function Menu once more.

ON FUNC
OFF Scan :Off

Playback of the current track continues.

To cancel the Function Menu, press the BAND button.

Note:
- Scan Play is canceled automatically after all the tracks on a disc have been scanned.

121

DEH-P945R,DEX-P99R

Using Multi-CD Players

This product can control one or more multi-CD players. (There are some types of Multi-CD players such as the "CDX-P630S" which enable connection of a single unit only.)

Basic Operation of Multi-CD Players

1. Select the multi-CD player source.

Each press
changes the Source …

M-CD ♫♪♪♪|±|±|□|
D−1 Tr−1 00m02s

Each press
changes the Source …

Note:
* The multi-CD player may perform a preparatory operation, such as verifying the presence of a disc or reading disc information, when the power is turned ON or a new disc is selected for playback. "READY" is displayed.
* If the multi-CD player cannot operate properly, an error message such as "ERROR-14" is displayed. Refer to the multi-CD player owner's manual.
* If there are no discs in the multi-CD player magazine, "NO DISC" is displayed.

2. Select the desired disc.

M-CD ♫♪♪♪|±|±|□|
D−3 Tr−1 00m02s

3. Select the desired track (or fast-forward/reverse, per the chart below).

M-CD ♫♪♪♪|±|±|□|
D−3 Tr−3 00m02s

This product lets you select the track search function or fast-forward/reverse function by changing the length of time you press the button.

Track search	0.5 seconds or less
Fast-forward/Reverse	Continue pressing

Using the Built-in CD Player

Pause

1. Select the Pause mode (Pause) in the Function Menu.

2. Stop playback temporarily or restart the system.

ON FUNC
OFF Pause :On

To cancel the Function Menu, press the BAND button.

CD Sound Quality Adjustment

COMP (Compression) and DBE (Dynamic Bass Emphasis) functions are available to adjust the sound quality of your multi-CD player. Each can be adjusted in two levels, but they cannot be used together.

● **COMP**

The COMP (Compression) function eliminates distortion caused by an imbalance between loud and subdued sounds at higher volumes.

● **DBE**

DBE (Dynamic Bass Emphasis) boosts bass level to give a fuller sound.

COMP/DBE ON/OFF Switching

1. Select the COMP/DBE switching mode (COMP and DBE) in the Function Menu.

2. Select the desired mode in the following order:

SEL FUNC COMP&DBE
COMP 1

COMP OFF → COMP 1 → COMP 2 → COMP OFF → DBE 1 → DBE 2

To cancel the Function Menu, press the BAND button.

Disc Title Input

The built-in CD player's Disc Title Input function permits entry of up to 100 disc titles comprising up to 10 characters when one or more multi-CD players is installed.

Note:
* During "CD TEXT" reproduction, you cannot switch to this mode.

Using Multi-CD Players

4. Raise or lower the volume.

M-CD ♪♫ Main Volume 12 (MULTI)

5. Turn the source OFF.

Hold for 1 second — Each press changes the Source …

Playing Discs on a 50-Disc Type Multi-CD Player

When a magazine is loaded into a 50-Disc type multi-CD player, information on all the discs in the magazine is read.

If you start playing a disc on a 50-Disc type multi-CD player before reading of information on all discs has been completed, reading of information stops part way through. This will prevent you from using a number of functions. (If you try and use these functions, "NOT READY" is displayed.)

If this happens, reading of information begins again when you switch to a component other than 50-Disc type multi-CD player.

Switching the Multi-CD Player

It is possible to connect up to three multi-CD players by means of a multiple installation adapter. When two or more multi-CD players are installed, their priorities must be specified. Follow the multi-CD player instructions carefully, and set the address switches properly.

• **Select the multi-CD player you want to use.**

M-CD MAGAZINE 2 (MULTI)

MAGAZINE 1 → MAGAZINE 2 → MAGAZINE 3

Disc Number Search

Disc Number Search (for 6-Disc 12 -Disc types)

You can select discs directly with the 1–6 buttons. Just press the number corresponding to the disc you want to listen to.

Note:
• When a 12-Disc Multi-CD Player is connected and you want to select disc 7 to 12, press the 1–6 buttons for 2 seconds or longer.

• **Select the desired disc. (e.g. Press button 3.)**

M-CD ♪♫ D-3 Tr-1 00m02s (MULTI)

Disc Number Rough Search (for 50-Disc type only)

This handy function lets you select discs loaded in a 50-Disc Multi-CD Player using the 1–5 buttons. The 50 discs are divided into five blocks, with each of the 1–5 buttons assigned to a block.
For example, if you press button 1, discs 10 through 19 are searched in order, and then the disc with the lowest disc number is selected.

Note:
• Pressing button 5 lets you select the 50th disc only.
• Button 6 does not operate.
• Rough search of discs 1 to 9 is not possible. Use the ▲/▼ buttons to select a desired disc.
• "NOW LOADING" will be displayed in the following cases:
 * If the disc in the extra tray is selected.
 * If the disc is moved from the extra tray to the magazine.
 (Refer to the 50-Disc type multi-CD player's owner's manual.)
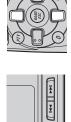
DEH-P945R,DEX-P99R

Using Multi-CD Players

1. Press the appropriate button from 1–5 to select the block containing the desired disc. (e.g. Press button 4.)

2. Select the desired disc.

Entering the Function Menu

In this menu you can select Multi-CD Player functions.

- **Select the desired mode in the Function Menu.**

Each press
changes the Mode …

Each press of the FUNCTION button selects the mode in the following order:

Repeat → ListSearch → ABC-Search* → Random → Scan → ITS-Play → Music Group* → Frequent* → Pause → COMP and DBE

* ABC-Search, Music Group and Frequent are 50-Disc type multi-CD player functions. You cannot switch to these modes when using 6-Disc and 12-Disc type multi-CD players.

To cancel the Function Menu, press the BAND button.

Note:
- With multi-CD players that do not feature COMP (Compression) and DBE (Dynamic Bass Emphasis) functions, "NO COMP" is displayed if you switch to the COMP mode.
- After entering the Function Menu, if you do not perform an operation within about 30 seconds, the Function Menu is automatically canceled.

Entering the Detailed Setting Menu

In this menu you can perform Disc Title Input, ITS Program, Music Group Input and PGM button settings.

- **Enter the Detailed Setting Menu.**

Hold for 2 seconds

Each press of the FUNCTION button selects the mode in the following order:

TitleInput → ITS → MG Input* → PGM-key

* MG Input is a 50-Disc type multi-CD player function. You cannot switch to this mode when using 6-Disc and 12-Disc type multi-CD players.

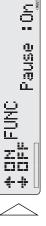To cancel the Detailed Setting Menu, press the BAND button.

Note:
- You can cancel the Detailed Setting Menu by pressing the FUNCTION button again for 2 seconds or more.

Pause

1. Select the Pause mode (Pause) in the Function Menu.

2. Stop playback temporarily or restart the system.

To cancel the Function Menu, press the BAND button.

Using Multi-CD Players

CD Sound Quality Adjustment

COMP (Compression) and DBE (Dynamic Bass Emphasis) functions are available to adjust the sound quality of your multi-CD player. Each can be adjusted in two levels, but they cannot be used together.

COMP and DBE can also be used with another multi-CD player which is equipped with these functions. If it is not so equipped, "NO COMP" is displayed when COMP/DBE switching is attempted.
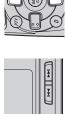
● COMP

The COMP (Compression) function eliminates distortions caused by an imbalance between loud and subdued sounds at higher volumes.

● DBE

DBE (Dynamic Bass Emphasis) boosts bass levels to give fuller sounds.

COMP/DBE ON/OFF Switching

1. **Select the COMP/DBE switching mode (COMP and DBE) in the Function Menu.**

2. **Select the desired mode in the following order:**

```
+:SEL   FUNC   COMP&DBE
+:          COMP 1
                        (DBE2)
```

COMP OFF → COMP 1 → COMP 2 → COMP OFF → DBE 1 → DBE 2

To cancel the Function Menu, press the BAND button.

Multi-CD Player Repeat Modes

Multi-CD players offer four repeat modes: One-track Repeat, Disc Repeat, Multi-CD player Repeat and All Repeat. Multi-CD player Repeat is the default mode (normal play) when one or more multi-CD players is installed.

1. **Select the Repeat Selecting mode (Repeat) in the Function Menu.**

2. **Select the desired repeat mode in the following order:**

```
+:  +FUNC   Play Mode
+:SEL.   Repeat : TRK
```

Multi-CD player Repeat ("MULTI" indicator lights) → ALL Repeat (Nothing) → One-track Repeat ("Repeat" is displayed) → Disc Repeat ("Repeat" is displayed and "DISC" indicator lights)

To cancel the Function Menu, press the BAND button.

Note:
• All Repeat is available only when two or more multi-CD players are installed.

● Multi-CD Player Repeat Modes

Mode	Operation
One-track Repeat	Plays current track repeatedly. • When Track Search or fast forward/reverse is performed, the mode returns to the Disc Repeat mode. • When a different disc or multi-CD player is selected, the mode switches to the Multi-CD player Repeat mode.
Disc Repeat	Plays current disc repeatedly. • When a different disc or multi-CD player is selected, the mode switches to the Multi-CD player Repeat mode.
Multi-CD player Repeat (normal play)	Plays all discs loaded in the multi-CD player magazine repeatedly in order, starting with the first disc.
All Repeat	Plays all discs in the magazines of all multi-CD players in order.

DEH-P945R, DEX-P99R

Using Multi-CD Players

Multi-CD Player Random Play

1. **Select the Random mode (Random) in the Function Menu.**

2. **Switch the Random Play ON or OFF.**

[display: ON FUNC / OFF   Random :On (MULTI)]

When Multi-CD Player Random Play is ON, you can combine it with Repeat Mode to operate as shown below. Switching the Repeat Mode switches Random Play OFF.

To cancel the Function Menu, press the BAND button.

Note:
• Since playback is random, the same track may be repeated consecutively.

● **Multi-CD Player Random Play Options**
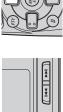
Mode	Operation
One-track Repeat	The mode returns to the Disc Repeat mode, and all tracks on the current disc are played randomly.
Disc Repeat "Random" + "DISC"	All tracks on the current disc are played randomly.
Multi-CD player Repeat "Random" + "MULTI"	All tracks on the discs in the multi-CD player magazine are played randomly.
All Repeat "Random"	All tracks on the discs in all the multi-CD players are played randomly.

Multi-CD Player Scan Play

When one or more multi-CD players are installed, the first 10 seconds or so of each track on a disc are scanned in the One-track Repeat and Disc Repeat modes and the first tracks of each disc in the multi-CD player Repeat and All Repeat modes.

1. **Select the Scan mode (Scan) in the Function Menu.**

2. **Switch the Scan Play ON.**

[display: ON FUNC / OFF   Scan :On (MULTI)]

When multi-CD player Scan Play is switched ON and combined with the Repeat Mode, it operates as shown in the following chart. If the Repeat Mode is switched, Scan Play switches OFF.

3. **When you hear the track you are looking for, cancel Scan Play.**

If the Function Menu has been canceled automatically, select the Scan mode in the Function Menu again.

[display: ON FUNC / OFF   Scan :Off (MULTI)]

Playback of the current track or disc will continue.

To cancel the Function Menu, press the BAND button.

Note:
• Scan Play is canceled automatically after all the tracks or discs have been scanned.

● **Multi-CD Player Scan Play Options**

Mode	Operation
One-track Repeat	The mode returns to the Disc Repeat mode, and all tracks on the current disc are scanned.
Disc Repeat "Scan" + "DISC"	All tracks on the current disc are scanned.
Multi-CD player Repeat "Scan" + "MULTI"	The first tracks of all the discs in the multi-CD player magazine are scanned.
All Repeat "Scan"	The first tracks of all the discs in the magazines of all the installed multi-CDs are scanned.

ITS (Instant Track Selection)

The ITS function allows you to search for the track you wish to play when one or more multi-CD players are installed. You can use ITS to program automatic playback of up to 24 tracks per disc from up to 100 discs. (You can store ITS program and Disc Title data for up to 100 discs in memory. With a 50-Disc type multi-CD player, you can also store Music Group data.)

Using Multi-CD Players

ITS Programming

ITS programming can be conducted in any multi-CD player playback mode except ITS playback.

1. Play the track you wish to program.

2. Select the ITS Programming mode (ITS) in the Detailed Setting Menu.

3. Program the desired track.

To cancel the Detailed Setting Menu, press the BAND button.

Note:
• After 100 discs have been programmed, data for a new disc will overwrite the data for the disc that has not been played back for the longest time.
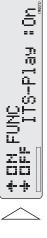
ITS Playback

ITS playback can be performed in any repeat mode.

1. Select the ITS Playback mode (ITS-Play) in the Function Menu.

2. Switch the ITS Playback ON or OFF.

When ITS Play is ON, you can combine it with Repeat Mode to operate as shown below. If you change Repeat Mode into One-track Repeat, ITS Play will be turned OFF.

The ITS programmed tracks are played back in order from first to last.

To cancel the Function Menu, press the BAND button.

Note:
• If no track in the current range is programmed for ITS playback, "ITS EMPTY" is displayed.

● Multi-CD Player ITS Play

Mode	Operation
One-track Repeat	The mode returns to the Disc Repeat mode and all programmed tracks on the current disc are played.
Disc Repeat "ITS" + "DISC"	All programmed tracks on the current disc are played.
Multi-CD player Repeat "ITS" + "MULTI"	All programmed tracks on the discs in the multi-CD player magazine are played back. • If there are no programmed tracks on the current disc, ITS advances to the next disc.
All Repeat "ITS"	The programmed tracks on all the discs in the magazines of all the installed multi-CD are played back. • If there are no programmed tracks on the current disc (or multi-CD player), ITS advances to the next disc (or multi-CD player).

Erasing ITS Programs

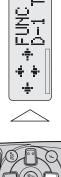ITS programs for up to 100 discs are stored permanently until you erase them.

● Erase a Track Program

1. Select the track you wish to erase, during ITS playback.

2. Select the ITS Programming mode (ITS) in the Detailed Setting Menu.

3. Erase the track program.

ITS is canceled and playback of the next ITS-programmed track begins. If there are no more programmed tracks in the current range, "ITS EMPTY" is displayed and normal playback resumes.

To cancel the Detailed Setting Menu, press the BAND button.

DEH-P945R,DEX-P99R

Using Multi-CD Players

● Erase a Disc Program

1. Select the disc you wish to erase, while the disc is playing.

2. Select the ITS Programming mode (ITS) in the Detailed Setting Menu.

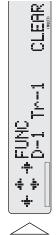**3. Erase the disc program.**

FUNC
D-1 Tr-1   CLEAR
(MULTI)

To cancel the Detailed Setting Menu, press the BAND button.

Disc Title Input

You can input Titles up to 10 characters long for up to 100 discs. Using this function lets you easily search for and select a desired disc for play. (You can store ITS program and Disc Title data for up to 100 discs in memory. With a 50-Disc type multi-CD player, you can also store Music Group data.)

1. Play the disc you wish to input the disc title.

2. Select the Disc Title Input mode (TitleInput) in the Detailed Setting Menu.

3. Switch the Alphabet modes.

FUNC   TitleInput
D-1   ✦a✦
(MULTI)

Each press
changes the Mode ...

Each press of the button 1 changes the mode in the following order:
Alphabet (Upper case), Numbers and Symbols → Alphabet (Lower case)
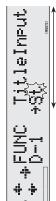→ European letters, such as those with accents (e.g. á, à, ä, ç)

Note:
• You can switch to the Numbers and Symbol mode by pressing button 2.

4. Select a letter, number or symbol.

FUNC   TitleInput
D-1   ✦S✦
(MULTI)

To insert a space, select the flashing cursor.

5. Reverse or advance box by box.

FUNC   TitleInput
D-1   ✦St✦
(MULTI)

6. When the title is completed, store it in memory to make the flashing cursor fade out.

FUNC   TitleInput
D-1   ✦Stingray✦
(MULTI)

To cancel the Detailed Setting Menu, press the BAND button.

Note:
• Titles remain in memory, even after the disc has been removed from the magazine, and are recalled when the disc is reinserted.
• After the titles for 100 discs have been entered, data for a new disc will overwrite the data for the disc that has not been played back for the longest time.

Using Multi-CD Players

Selecting Discs by Disc Title List

Follow the procedures below to play a disc for which you have input the title in a multi-CD player:

1. Select the Disc Title List mode (ListSearch) in the Function Menu.

2. Each time you press the ◀ or ▶ button, titles in the current disc magazine are displayed in the order of their disc numbers.

Nothing is displayed for discs whose titles have not been input.

3. Select the desired disc for playback by pressing the ▲ button when its title is displayed.

To cancel the Function Menu, press the BAND button.

## Selecting Discs Using "ABC" Disc Title Search (for 50-Disc type only)

You can search for and select a disc by searching for the first letter of the desired disc's Disc Title.

1. Select the "ABC" Disc Title Search mode (ABC-Search) in the Function Menu.

2. Select the desired first letter.

3. Select the desired disc title.
Each time you press the button, titles with the selected first letter are displayed in the order of their disc numbers.

Note:
- When there are no disc titles starting with the letter you selected, "NO TITLE" is displayed.
- Press the ▼ button to return to selection of the first letter.

4. Select the desired disc for playback by pressing the ▲ button when its title is displayed.

To cancel the Function Menu, press the BAND button.

Using Multi-CD Players
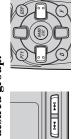
Music Group Play (for 50-Disc type only)

The Music Group Play function classifies discs loaded in a 50-Disc type multi-CD player into 10 groups, and plays only discs from the same group. Up to 100 discs can be classified into groups. (Music Group, ITS program and Disc Title data for up to 100 discs can be stored in memory.)

Note:
• Music Group types are as follows:
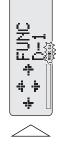ROCK 1, ROCK 2, POP, JAZZ, INSTRMNT, CLASSIC, GROUP 1, GROUP 2, GROUP 3, GROUP 4

Classifying a Disc into a Group

1. Play the disc you want to classify into a group.

2. Select the Music Group Input mode (MG Input) in the Detailed Setting Menu.
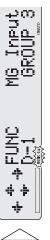
3. Select the desired group.

4. Register the disc in the selected group.

To cancel the Detailed Setting Menu, press the BAND button.

Note:
• Even if you remove a disc from a magazine after you have registered it in a group, its assigned group is stored in memory. This means that when you reinsert the disc in the magazine, there's no need to reassign it to the group.
• After assigning 100 discs to groups, data input for a new disc overwrites data for the disc that has been played least recently.

Music Group Playback

Only discs in the same group are played.

1. Select the Music Group Playback mode (Music Group) in the Function Menu.

2. Select the desired Music Group.

Note:
• At first, the group of the disc playing is displayed. If the disc playing does not belong to a group, "NO GROUP" is displayed.

3. Switch music group playback ON or OFF.

"Music G ▲"

To cancel the Function Menu, press the BAND button.

Note:
• If there are no discs registered in the selected group, "MG EMPTY" is displayed.
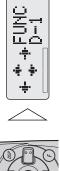
Deleting a Disc from a Music Group

1. Play the disc you want to delete from a group.

2. Select the Music Group Input mode (MG Input) in the Detailed Setting Menu.
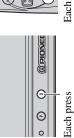
3. Delete the disc from the group.

To cancel the Detailed Setting Menu, press the BAND button.

Note:
• During music group playback, if you have deleted the disc currently playing from the group, the next disc in the group is played. If all discs in the same group have been deleted, "NO GROUP" is displayed.

Using Multi-CD Players

Displaying Disc Title or Music Group (for 50-Disc type only)

You can display the Disc Title or Music Group of the disc playing.

- **Select the desired display.**

Each press changes the Display ...

Each press changes the Display ...

Each press of the DISPLAY button changes the display in the following order:

Disc Title → Music Group

Note:
- When playing a disc that does not have a title, if you switch to Disc Title display, "No Title" flashes for 4 seconds, and then the display returns to the previous indications.
- When playing a disc that doesn't belong to a group, if you select Music Group display, "NO GROUP" flashes for 4 seconds, and then the display returns to the previous indications.

Frequency Play (for 50-Disc type only)

The Frequency Play Function plays discs in order, from the most frequently played disc to the least frequently played disc, or vice versa.

1. **Select the Frequency Playback mode (Frequent) in the Function Menu.**

2. **Select the desired play order.**

For play of discs in order starting with the most frequently played disc, select "Most". For play of discs in order starting with the least frequently played disc, select "Least".

3. **Switch Frequency playback ON or OFF.**

To cancel the Function Menu, press the BAND button.

Note:
- During Frequency Playback, pressing the ▲ or ▼ button changes to the previous or next disc in the frequency order.

Ejecting a Single Disc (for 50-Disc type only)

This function lets you eject discs one at a time from a 50-Disc multi-CD player.

1. **Play the disc you want to eject.**

2. **Move the disc to the extra tray.**

   Hold for 2 seconds

3. **Remove the disc from the extra tray.**

   (Refer to the 50-Disc type multi-CD player's owner's manual.)

Note:
- This function does not operate if a disc is already loaded in the extra tray.

131

DEH-P945R, DEX-P99R

Specifications

General

Power source .... 14.4 V DC (10.8 – 15.1 V allowable)
Grounding system .... Negative type
Max. current consumption .... 10 A
Dimensions
(mounting size) ...... 178 (W) × 50 (H) × 155 (D) mm
(front face) .... 188 (W) × 58 (H) × 20 (D) mm
Weight .... 1.8 kg

Amplifier

Maximum power output .... 40 W × 4
Continuous power output .... 25 W × 4
(DIN45324, +B = 14.4 V)
Load impedance .... 4 Ω (4 – 8 Ω allowable)
Preout output level/output impedance .... 500 mV/1 kΩ

CD player

System .... Compact disc audio system
Usable discs .... Compact disc
Signal format .... Sampling frequency: 44.1 kHz
Number of quantization bits: 16; linear
Frequency characteristics .... 5 – 20,000 Hz (±1 dB)
Signal-to-noise ratio ...... 112 dB (1 kHz) (IEC-A network)
Dynamic range .... 98 dB (1 kHz)
Number of channel .... 2 (stereo)

FM tuner

Frequency range .... 87.5 – 108 MHz
Usable sensitivity
.... 11 dBf (1.0 μV/75 Ω, mono, S/N: 30 dB)
50 dB quieting sensitivity ... 16 dBf (1.7 μV/75 Ω, mono)
Signal-to-noise ratio .... 70 dB (IEC-A network)
Distortion .... 0.3% (at 65 dBf, 1 kHz, stereo)
Frequency response .... 30 – 15,000 Hz (±3 dB)
Stereo separation .... 40 dB (at 65 dBf, 1 kHz)

MW tuner

Frequency range .... 531 – 1,602 kHz
Usable sensitivity .... 18 μV (S/N: 20 dB)
Selectivity .... 50 dB (±9 kHz)

LW tuner

Frequency range .... 153 – 281 kHz
Usable sensitivity .... 30 μV (S/N: 20 dB)
Selectivity .... 50 dB (±9 kHz)

DSP

Equalizer (13 Band Graphic Equalizer)
Frequency 50, 80, 125, 200, 315, 500, 800,
1.25 k, 2 k, 3.15 k, 5 k, 8 k, 12.5 k (Hz)
Level .... ± 12 dB (2 dB)
Auto Equalizer (STD Mode)
(Front and Rear and Subwoofer 13 band graphic +
Rear 2 band parametric)
Frequency (Front and Rear and Subwoofer)
.... 50, 80, 125, 200, 315, 500, 800,
1.25 k, 2 k, 3.15 k, 5 k, 8 k, 12.5 k (Hz)
Frequency (Rear) .... 100 Hz – 8 kHz (1/3 oct)
Level .... +6 —–12 dB (2 dB)
Q Factor (Rear) 1, 2, 3, 6
Auto Equalizer (PRO Mode)
(13 band graphic)
Frequency 50, 80, 125, 200, 315, 500, 800,
1.25 k, 2 k, 3.15 k, 5 k, 8 k, 12.5 k (Hz)
Level .... +6 —–12 dB (2 dB)
Network (STD Mode)
Front/Rear ...... HPF frequency: 50, 80, 125, 200 (Hz)
Slope: 0, –6, –12 dB/oct
Level: 0 — –24 dB (1 dB)
Subwoofer (Mono)
.... LPF frequency: 50, 63, 80, 100,
125, 160, 200 (Hz)
Slope: –6, –12, –18 dB/oct
Level: +6 — –24 dB (1 dB)
Phase: Normal/Reverse

Network (PRO Mode)
High ...... HPF frequency: 2 k, 2.5 k, 3.15 k, 4 k, 5 k,
6.3 k, 8 k, 10 k, 12.5 k (Hz)
Slope: –6, –12, –18, –24 dB/oct
Level: +6 — –24 dB (1 dB)
Phase: Normal/Reverse
Mid .... LPF frequency: 2 k, 2.5 k, 3.15 k, 4 k, 5 k,
6.3 k, 8 k, 10 k, 12.5 k (Hz)
HPF frequency: 40, 50, 63, 80, 100, 125,
160, 200, 250 (Hz)
Slope: 0, –6, –12, –18, –24 dB/oct
Level: 0 — –24 dB (1 dB)
Phase: Normal/Reverse
Low (Stereo/Mono)
.... LPF frequency: 40, 50, 63, 80, 100,
125, 160, 200, 250 (Hz)
Slope: –12, –18, –24, –30, –36 dB/oct
Level: +6 — –24 dB (1 dB)
Phase: Normal/Reverse
Time Alignment .... 0 — 400 cm (2 cm)
0 — 160 inch (0.5 inch)

Note:
- Specifications and the design are subject to possible modification without notice due to improvements.

Service Manual

CD MECHANISM MODULE

CX-680

● This Service Manual outlines operations of the CD mechanism module used in the models listed blow.

● For repair, use this Service Manual and the Service Manual of the model used in the system.

Model	Service manual	CD mechanism module	CD mechanism unit
DEX-P1R/UC DEH-P946/ES DEX-P1/ES	CRT2206	CXK5101	CXB1699
DEH-P945R/EW DEX-P99R/EW	CRT2207	CXK5101	CXB1699

CONTENTS

1. CIRCUIT DESCRIPTIONS

1.1 Preamplifier (UPC2572GS: IC101)

The preamplifier processes pickup output signals to generate signals to be sent to the servo, demodulator, and controller. The preamplifier with built-in photodetector converts signals from the pickup into intermediate voltage in the pickup. Then, addition is made in the RF amplifier (IC101) to obtain RF, FE, TE, and TE zero cross signals. The system consists of the UPC2572GS and other components explained below. The system uses a single power source (+5 V). Therefore, the reference voltage of IC101 and the reference voltage of the power unit and servo circuit are REFO (+2.5 V). REFO is obtained from REFOUT of servo LSI (IC201: UPD63702GF) via a buffer, and is output from Pin 19 of IC101. This REFO is used as reference for all measurements.

Note: Do NOT short-circuit REFO and GND during measurement.
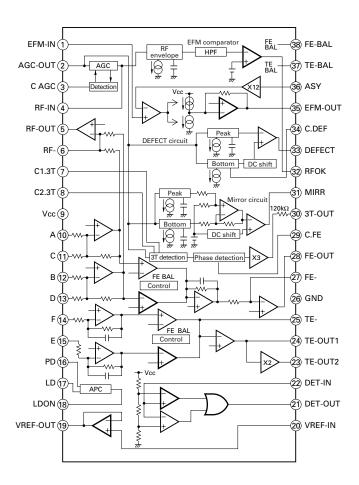
Fig. 1 Block Diagram of UPC2572GS

1) Automatic Power Control (APC) circuit

Laser diode has negative temperature characteristics with great optical output when the diode is driven with constant current. Therefore, current must be controlled by a monitor diode to ensure constant output. Thus functions the APC circuit. LD current can be obtained by measuring the voltage between LD1 and GND. The current value is approximately 35 mA.
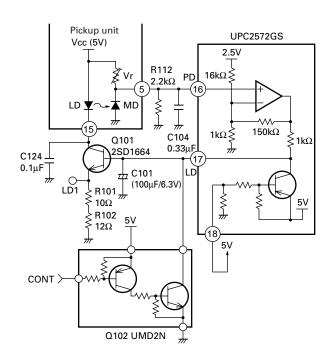
Fig. 2 APC Circuit

2) RF amplifier and RF AGC amplifier

Photodetector outputs (A+C and B+D) are added, amplified and equalized in IC101, and output to the RFI terminal as RF signal. (Eye pattern can be checked at this terminal.)

Low-frequency components of voltage RFI is:

RFI = (A + B + C + D) x 3.22

where R111 is offset resistor to keep RFI signal within the output range of the preamplifier. RFI signal is goes under AC coupling, and is input to Pin 4 (RFIN terminal).

IC101 contains an RF AGC circuit. RFO output from Pin 2 is maintained to a constant level (1.2 ±0.2 Vp-p). The RFO signal is used in the EFM, DFCT, and MIRR circuits.

3) EFM circuit

The EFM circuit converts RF signal into digital signals of "0" and "1." RFO signal after AC coupling is input to Pin 1, and supplied to the EFM circuit.

Asymmetry caused during manufacturing of discs cannot be eliminated solely by AC coupling. Therefore, the system controls the reference voltage ASY of the EFM comparator by using the fact that probability to generate "0" and "1" is 50% in EFM signal. This reference voltage ASY is generated by output from the EFM comparator through L.P.F. EFM signal is output from Pin 35. As signal level, amplification is 2.5 Vp-p around REFO.

4) DFCT (defect) circuit

DFCT signal detects mirror defect in discs, and is output from Pin 33. The system outputs "H" when a mirror defect is detected.

If disc is soiled, the system determines it as lack of mirror. Therefore, the system inputs the DFCT signal output to the HOLD terminal of servo LSI. Focus and tracking servo drives change to Hold status only when DFCT output is in "H" so that performance of the system upon detection of defect can be improved.

5) RFOK circuit

The RFOK circuit outputs signal to show the timing of focus closing servo, as well as the status of focus closing during playback. The signal is output from Pin 32. The system inputs the RFOK signal output to the RFOK terminal of servo LSI. The servo LSI issues Focus Close command. The system outputs signal in "H" during focus closing and playback.
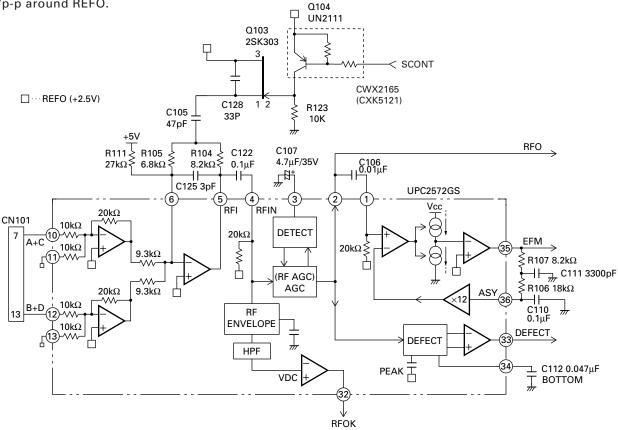

Fig. 3 RF AMP, RF AGC, EFM, DFCT, RFOK Circuit

CX-680

6) Focus-error amplifier

The system outputs photodetector output (A+C and B+D) as FE signal (A+C-B-D) from Pin 28 via the difference amplifier, then via the error amplifier.

Low-frequency components of voltage FEY is:

$$FEY = (A+C-B-D) \times \frac{20k\Omega}{10k\Omega} \times \frac{90k\Omega}{68.8k\Omega} \times \frac{R108}{17.2k\Omega}$$

: (FE level of pickup unit x 5.02)

An S curve equivalent to approximately 1.6 Vp-p is obtained at FE output (Pin 28) by using REFO as reference. The cut-off frequency of the amplifier of the last layer is 12.4 kHz.
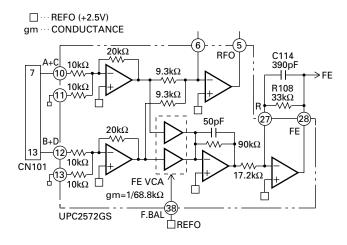
Fig. 4 Focus-error amplifier

7) Tracking-error amplifier

Outputs E and F from the photodetector are output as TE signal (E-F) from Pin 24 via the difference amplifier, then via the error amplifier.

Low-frequency components of voltage TEY is:

$$TEY = (E-F) \times \frac{63k\Omega}{31k\Omega + 16k\Omega} \times \frac{R109}{17k\Omega}$$

: (TE level of pickup unit x 5.36)

TE waveforms equivalent to approximately 1.5 Vp-p are obtained at TE output (Pin 24) by using REFO as reference. The cut-off frequency of the amplifier of the last layer is 19.5 kHz.

8) Tracking zero-cross amplifier

Tracking zero-cross signal (TEC signal) is generated by amplifying TE waveforms (voltage at Pin 24) by a factor of four. The signal is used for detecting the zero-cross point of tracking error in the servo LSI UPD63702GF. The purposes of detecting the zero-cross point are as follows:

(1) To be used for counting tracks for carriage move and track jump.

(2) To be used for detecting the direction of lens movement when tracking is closed. (To be used in the tracking brake circuit mentioned later.)

The frequency range of TEC signal is from 500 Hz to 19.5 kHz.

Voltage TEC = TE level x 4

In other words, the TEC signal level is calculated as 6 Vp-p. This level exceeds the D range of the operation amplifier, resulting in the signal to clip. However, there shall be no problem, since the servo LSI uses only zero-cross point.
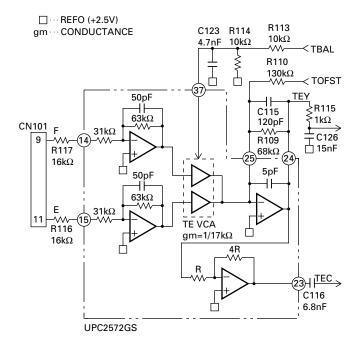

Fig. 5 Tracking-error amplifier,
Tracking zero-cross amplifier

4

9) MIRR (mirror) circuit

MIRR signal shows ON and OFF track information. The signal is output from Pin 31.

The status of MIRR signal is as follows:

      Laser beam ON track: MIRR = "L"

      Laser beam OFF track: MIRR = "H"

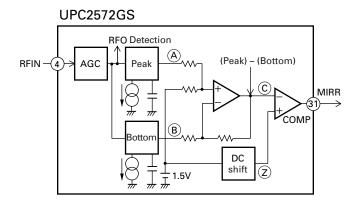The signal is used in the brake circuit mentioned later.
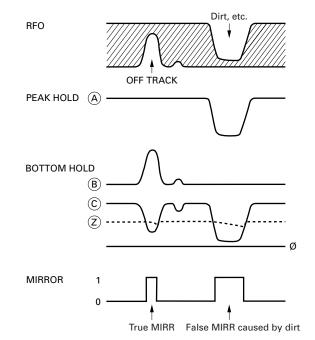
UPC2572GS

Fig.6 MIRR Circuit

Fig. 7 MIRR Circuit

10) 3T OUT circuit

The system detects flickering of RF signal when disturbance is input to the focus servo loop, and outputs the difference of phase between FE signal and RF-level fluctuation signal from Pin 30. The resulting signal is obtained through L.P.F. with a fc of 40 Hz. This signal is used for automatic adjustment of FE bias.

UPC2572GS
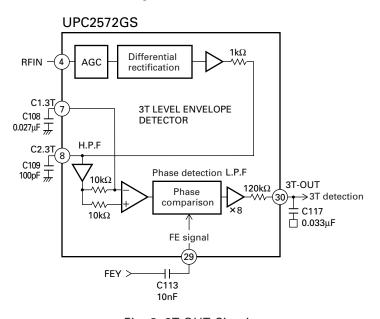
Fig. 8 3T OUT Circuit

1.2 Servo (UPD63702AGF: IC201)

The servo consists of mainly two parts. The first part is the servo processing unit to equalize error signals and control track jump, carriage move, in focus, etc. The second part is the signal processing unit to perform data decoding, error correction, and interpolation.

The system converts FE and TE signals from analog to digital in IC201, then outputs drive signals of the focus, tracking, and carriage systems via the servo block. The EFM signal input from the preamplifier is decoded by the signal processing unit, and eventually output as audio signal after conversion into analog from digital signals via the DA converter (IC201 contains audio DAC). Then, the system generates error signal for the spindle servo in the decoding process, sends the signal to the spindle servo to generate drive signal for spindle.

After that, drive signals for focus, tracking, carriage, and spindle are amplified in IC301 and BA6797FM, and supplied to respective actuators and motors.

1) Focus servo system

The main equalizer of focus servo is located in the UPD63702AGF. Fig. 9 shows block diagram of the focus servo.

For the focus servo system, the lens must be positioned within the focusing range in order to perform focus closing. To achieve this, the system moves the lens upward/downward by focus-search voltage of triangular waveform to detect the focusing point. During searching, the system kicks the SPDL motor to maintain rotation speed to set speed.

The servo LSI monitors FE and RFOK signals so that focus closing is performed automatically at an appropriate point.

Focus closing is performed when the following four conditions are satisfied:

(1) When the lens moves nearer to the disc.

(2) RFOK = "H"

(3) FZD signal (in IC) is latched to "H."
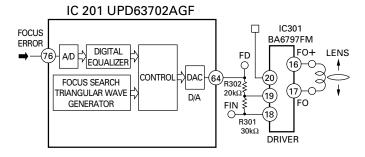
(4) FE = 0 (REFO as reference)

Fig. 9 Focus servo block diagram

When the conditions mentioned above are satisfied and focus is closed, the XSO terminal changes from "H" to "L." Then, the microcomputer starts monitoring RFOK signal through L.P.F after 40 ms.

If the system judges RFOK signal as "L," the microcomputer takes actions, including protection.

Fig. 10 shows operations related to focus closing. (The illustration shows when the system cannot perform focus closing.) S curve, search voltage, and actual lens behavior can be checked by pressing the Focus Close button when "01" is shown in Focus Mode Select in Test mode.

FD

REFO

LENS POSITION
RELATIVE TO DISC

NEAR

"JUST FOCUSED"
LEVEL

FAR

SIN

REFO

Expanding around "Just Focused Point"

RFI

REFO

FOK

FEX

FZD
THRESHOLD
LEVEL

FZD
(INTERNAL SIGNAL)

Focus closing would normally take place at these points

XSO
(IN THE EVENT
FOCUS IS
CLOSED)
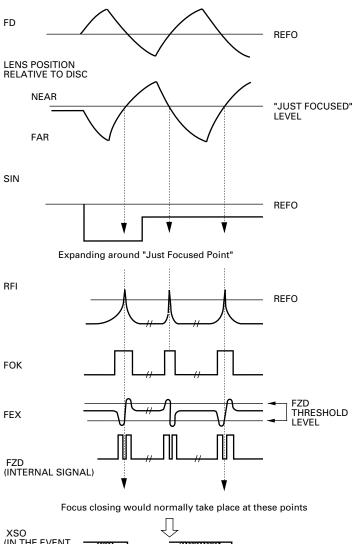
Fig. 10 Sequence of Focus Closing

2) Tracking servo system

The main equalizer of tracking servo is located in the UPD63702AGF. Fig. 11 shows block diagram of the tracking servo.
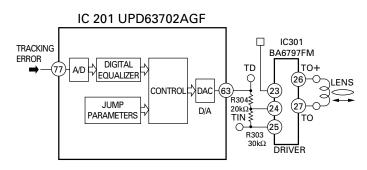
Fig. 11 Tracking servo block diagram

a) Track jump

Track jump is automatically performed by the auto sequence function in LSI when the LSI accepts command. The system has six types of jump (1, 4, 10, 32, 32x2, and 32x3) for truck jump during searching. In Test mode, the system can select and check these jump types and CRG move by selecting a mode. The microcomputer sets half of the total number of track jumps (two tracks if the total number of tracks are four), and counts the set number of tracks by using TEC signal. The system outputs brake pulse for a specified time (set by the microcomputer) from the point of time when the set number is counted, and stops the lens. Thus, tracking is closed, and the system can continue normal playback.

To improve servo withdrawal during track jump, the system sets the brake circuit to ON for 60 ms after brake pulse so that gain of the tracking servo can be increased.

FF/REV in normal mode is made by continuously performing single jump approximately ten times faster than in normal playback.
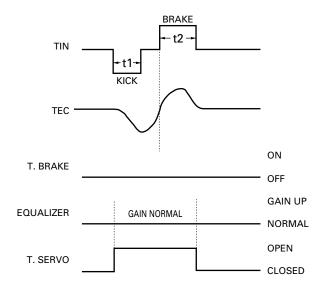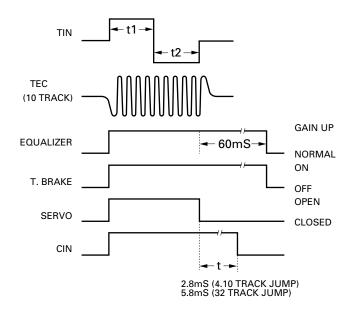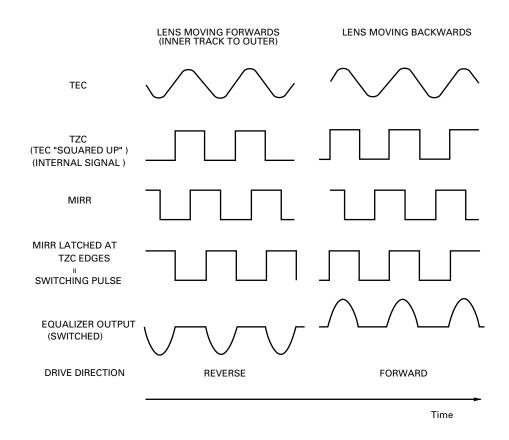

Fig. 12 Single track jump

Fig. 13 Multi track jump

b) Brake circuit

Servo withdrawal will deteriorate during setting and track jump. Thus, the system uses the brake circuit to provide stable withdrawal to servo loop.

The brake circuit detects the direction of lens movement, and outputs only drive signal in the opposite direction from the lens movement. Thus, the system delays the speed of the lens movement to stabilize withdrawal of the tracking servo.

The system judges sliding direction of track from TEC and MIRR signals, as well as the relationship of their phase.

Note: In the illustration, the phase of equalizer output is shown as the same as with that of TEC.

Fig. 14 Tracking Brake Circuit

3) Carriage servo system

Output from low-frequency components (lens position information) of the tracking equalizer is input to the carriage equalizer by the carriage servo. After obtaining a certain gain, the system outputs drive signal from the servo LSI. The signal is then applied to the carriage motor via the driver IC. More specifically, the pickup unit as a whole must be moved forward when lens offset during playback reaches a specified level. Therefore, gain of equalizer is set so that voltage higher than the activation voltage of the carriage motor is output. As actual operation, a certain threshold level is set for equalizer output in the servo LSI, and drive voltage is output from the servo LSI only when the equalizer output level exceeds that level. Thus, power consumption is reduced. Depending on eccentricity, etc. of disc, the equalizer output voltage may cross the threshold level several times before the pickup unit as a whole starts operation. At this time, waveforms of drive voltage from LSI are output as pulse.
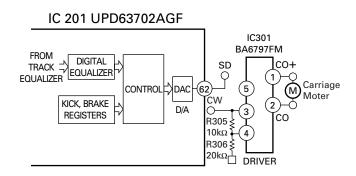
IC 201 UPD63702AGF

Fig. 15 Carriage Servo Circuit

TRACKING DRIVE
(LOW FREQUENCY)

LENS POSITION

DRIVE ON/OFF THRESHOLD

CRG DRIVE
(INSIDE UPD63702GF)

CRG MOTOR VOLTAGE
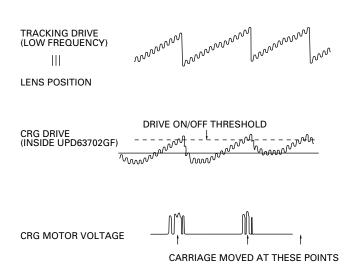
CARRIAGE MOVED AT THESE POINTS

Fig. 16 Carriage Signal Waveforms

4) Spindle servo system

The spindle servo has the following modes:

(1) Kick mode: To be used for accelerating disc rotation during setting.

(2) Offset mode:

a) To be used after completion of kick until completion of spindle lock during setting.

b) If focus is out of range during playback, this mode is used until focus is recovered. In both cases, Offset mode is used for maintaining disc rotation to the speed close to specified rotation.

(3) Adaptive Servo mode: CLV servo mode during normal operation. The system samples every WFCK in 16 cycles whether frame synchronous signal matches output from the internal frame counter in EFM demodulation block, and generates signal that shows matching/unmatching status. If signal showing unmatching status continues for 8 times, the system deems it as asynchronous status. Except this case, the system judges as synchronous. In Adaptive Servo mode, the system automatically selects withdrawal servo for asynchronous status, and steady-state servo for synchronous status.

(4) Brake mode: Mode to stop the spindle motor.

The microcomputer outputs brake voltage from the servo LSI. Waveforms of EFM are monitored inside the LSI. If the longest pattern of EFM exceeds specified intervals (if the rotation speed adequately slowed down), flag is activated in the LSI, and the microcomputer turns brake voltage to OFF. If no flag is activated after a specified time, the microcomputer changes from Brake to Stop mode. This status continues for a specified time. If the system changes to Stop mode during ejection, disc is ejected after the specified time mentioned above.

(5) Stop mode: To be used when the power is turned to ON, and during ejection. In Stop mode, the end-to-end voltage of the spindle motor is 0 V.

(6) Rough Servo mode: To be used when returning carriage (carriage move during long search, etc.). The system calculates linear speed from waveforms of EFM, and inputs either "H" or "L" level to the spindle equalizer. This mode is also used for confirmation of grating in Test mode.
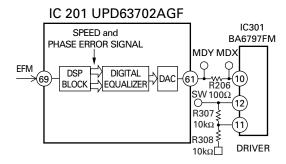

Fig. 17 Spindle servo block diagram

1.3 Automatic Adjustment Function

With this system, all circuit adjustments are automatically performed by using the preamplifier (UPC2572GS) and servo LSI (UPD63702AGF). All adjustments are automatically performed whenever disc is inserted or CD mode is selected by the Source key. Details of automatic adjustments are as follows:
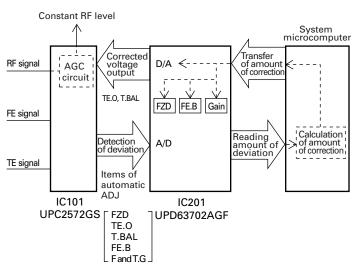
Fig. 18 Outline of Automatic Adjustment

1) Setting of FZD cancellation

This setting ensures focus closing. The system reads the FE offset level when the power is turned to ON, then writes the inverse voltage of offset value of that level to CRAM inside IC to cancel offset. Thus, the threshold level of FZD can be set to a constant value (+150 mV). As a result, "Latching FZD signal to H," which is one of the conditions required for focus closing in IC, is ensured.

2) TE offset automatic adjustment

Adjusts TE amplifier offset of the preamplifier to 0 V when the power is turned to ON.
Adjustment is made as follows:
(1) The microcomputer reads TE offset in LD OFF status via the servo LSI (TE1).
(2) The microcomputer calculates the voltage to be corrected using the TE1 value, and outputs from Pin 65 (pin name: TOFST) of the servo LSI. More specifically, calculation is made as follows:
TOFST2 = TOFST1 + TE1 x R110 / R109

3) Tracking balance (T.BAL) automatic adjustment

To make the sensitivity of Ech of TE output equal to that of Fch. In fact, adjustment is made so that the upper and lower portions of TE waveforms are symmetric to REFO.
Adjustment is made in the following steps:
(1) After focus close, the system kicks the lens in the radial direction to ensure TE waveforms to be generated.
(2) The microcomputer reads the peak bottom of TE waveforms via the servo LSI.
(3) The microcomputer calculates the amount of offset, then calculates the voltage to be corrected based on that offset. The system outputs the result from Pin 66 (pin name: TBAL) of the servo LSI.

(4) The voltage output from the servo LSI is input to Pin 37 of the preamplifier (IC101: UPC2572GS). Pin 37 is a control-voltage terminal of the TEVCA amplifier. According to voltage input, the system changes gain of Ech and Fch in the preamplifier, and adjusts the tracking balance to make the upper and lower portions of TE waveforms symmetric to REFO.

4) FE bias automatic adjustment

Maximizes the RFI level by optimizing focus point during playback. Adjustment is made by using 3T level waveforms of RF waveforms and the phase difference generated by input of disturbance of focus error. Since adjustment is made by inputting disturbance to focus loop, the system uses the same timing as with auto gain control (mentioned later~) for adjustment.
Adjustment is made in the following steps:
(1) Disturbance is input to focus loop by the command from the microcomputer (inside the servo LSI).
(2) The system detects flickering of 3T components of RF signal in the preamplifier.
(3) The system checks the phase difference between 3T components mentioned above and FE signal caused by input of disturbance to detect the direction of focus deviation. The result is output as DC voltage from Pin 30 (3TOUT) of the preamplifier.
(4) The 3TOUT voltage is input to Pin 75 (A/D port) of the servo LSI. The microcomputer reads this 3TOUT voltage via the servo LSI.
(5) The microcomputer calculates the amount of correction required. The results are transferred to offset of focus loop in the servo LSI.

As with auto gain control, the system repeats the same adjustment process several times to improve adjustment precision.

5) Auto gain control (AGC)

AGC adjustment is already used in the CD modules of the previous generation. This function automatically adjusts servo loop gain of focus and tracking.

Adjustment is made in the following steps:

(1) Disturbance is input to servo loop.

(2) The system extracts error signals (FE and TE) upon input of disturbance via the B.P.F. and obtains signals of G1 and G2.

(3) The microcomputer reads G1 and G2 signals via the servo LSI.

(4) The microcomputer calculates required amount of correction to adjust loop gain in the servo LSI.

The system repeats the same adjustment process several times to improve adjustment precision.

6) Initial adjustment value

For all automatic adjustments, the system uses the previous adjustment value as initial values, except when the power of the microcomputer has been turned to OFF (backup is turned to OFF). If backup has been turned to OFF, the system uses initial set value to perform automatic adjustment.

7) Display of coefficients of adjustment results

Results of automatic adjustments can be displayed in Test mode for confirmation. Display of coefficients in each automatic adjustment is as follows:

(1) FZD cancel, TE.OFST cancel, T.BAL, and FE bias
   Reference = 32 (32: No adjustment was required)
   Display is made in units of approximately 40 mV.
   Example: Coefficient of FZD cancel = 35
      35 - 32 = 3   3 x 40 mV = 120 mV
   Corrected amount is approximately +120 mV.
   Thus, FE offset before adjustment is -120 mV.

(2) Adjustment of F and T gain
   Reference: Focus = 13, tracking = 20
   The amount of reduced gain in comparison with the reference is known by looking at the coefficient displayed.
   Example: AGC coefficient = 40
   Amount of reduced gain = 20 log (20/40) = -6 dB

1.4 Power Supply and Loading Unit

The power supply of the system uses VD (8.3 V) supplied from the mother board, and generates power supply VM (7.6 V) for the loading motor driver and 5 V RegIC power supply (7.6 V). The system directly uses VD for power supplies for driving voltage of disc detection LED and CD driver IC. The microcomputer controls ON/OFF of the CD driver and laser diode by "CONT," and ON/OFF of 5 V by "CD5VON." The loading motor driver has no control terminal. However, "EJ" and "LOAD," which are input signals, play the same role as with control terminal.
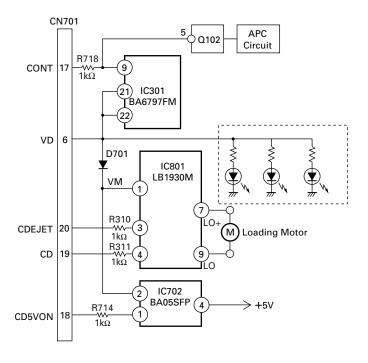
Fig. 19 Power Supply and Loading Unit

2. MECHANISM DESCRIPTIONS

● **Disc loading**

1. Three phototransistors are provided in front and rear of the rubber roller for disc transfer. Light is received from three LEDs corresponding the phototransistors. (Voltage of the phototransistors is "L" when receiving light.)

2. The voltage of the front phototransistor (P1) changes to "H" when disc is inserted and reaches immediately before the rubber roller. As a result, the loading motor is activated to drive.

3. The driving power of the motor is conveyed by the gear to rotate the rubber roller and transfer the disc. The rubber roller is located at an end of the loading arm, and in condition to lift the guide arm. The guide arm is driven by two springs so that the guide arm and rubber roller obtain appropriate pressure to transfer disc between them.

4. The clamper arm has the disc centering mechanism to determine disc size and clamp the disc to the center of the spindle motor. The centering arms are provided on the right and left of the clamper arm, and move around the supporting point. The end of centering arm has a lock arm (rotates around the centering pin, and is locked to the clamper arm when an 8-cm disc is inserted).

5. The lock arm is unlocked when a 12-cm disc is inserted, and moves to the position shown in Fig. 21. The position of the detection arm, having the center of rotation on the right centering arm as shown in Fig. below, is different for 8-cm and 12-cm discs. The detection arm moves clockwise according to outer diameter when disc is positioned on the spindle to move the detection lever downward as shown in the illustration.
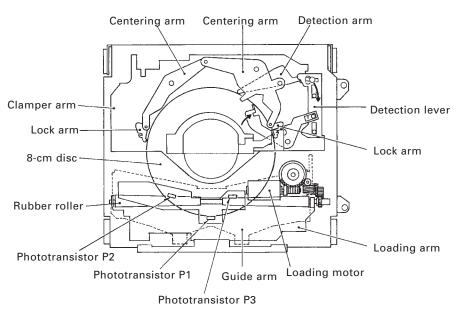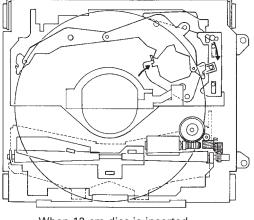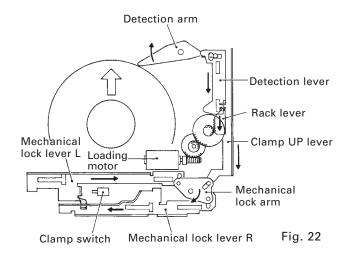
Fig. 20

When 12-cm disc is inserted

Fig. 21

15

● Clamp operation

When the rack lever in contact with the detection lever is driven by the loading motor, the rack lever engages with the gear to move the clamp UP lever, mechanical lock arm, and mechanical lock lever toward the directions indicated with arrows in Fig. 22.

The clamper arm, that was lifted by the clamp UP lever, comes down to clamp disc. The clamp UP lever and mechanical lock lever L move the loading arm apart from the disc. When the mechanical lock lever has moved to a specified position, the system turns the clamp switch to ON to stop the loading motor.

Fig. 22

● Mechanical locking

During ejection, two mechanical lock levers slide into the teeth of the frame to resist the mechanical spring and push down the front of floating (chassis) unit. Thus, the system detects the height of disc insertion. During playback, the floating unit is released when the mechanical lock levers move and disengage from the frame teeth.

● Ejection

Disc is ejected by the loading motor rotating in the inverse direction from loading to activate mechanical locking, release clamping, and press the roller. The system stops the loading motor when both phototransistors P2 and P3 in the rear of the rubber roller detect. (Voltage : L)

3. DISASSEMBLY

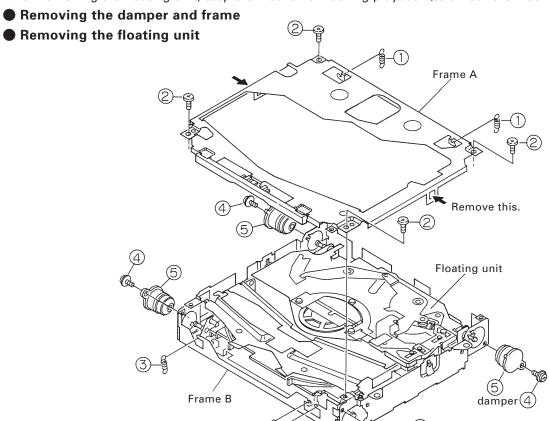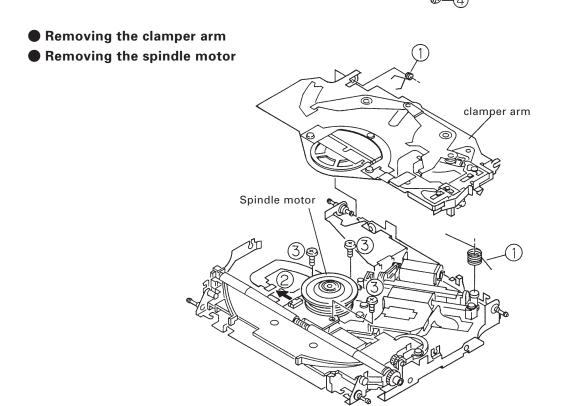When removing the floating unit, stop the mechanism during playback (to unlock the mechanism).
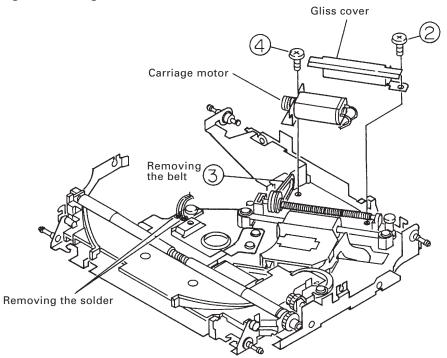
● **Removing the damper and frame**
● **Removing the floating unit**

Frame A

Remove this.

Floating unit

Frame B

damper

Fig. 23

● **Removing the clamper arm**
● **Removing the spindle motor**

clamper arm

Spindle motor

Fig. 24

● **Removing the Carriage Motor**

Gliss cover

④ ②

Carriage motor

Removing the belt ③

Removing the solder

Fig. 25

● **Removing the Loading motor**

②

Removing the Loading arm

Guide arm

Photo FPC unit

③

Removing the flexible PCB

④ ①

Gear cover

Removing the spring

Removing the solder

⑧

⑦ Gear B

⑥ Gear A

⑤

Transit gear bracket

Loading motor
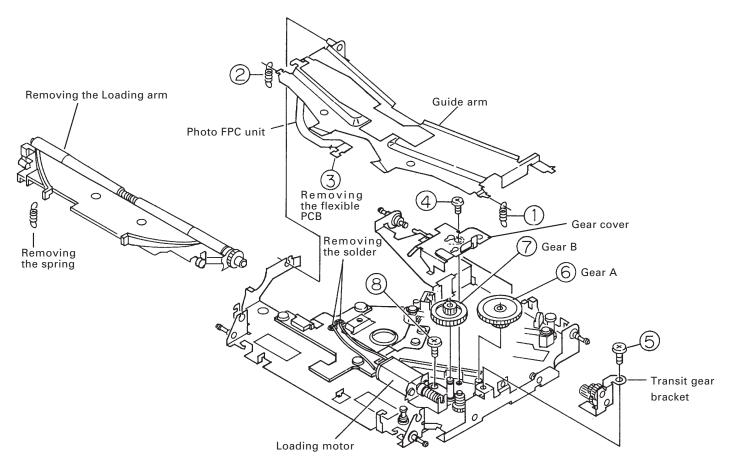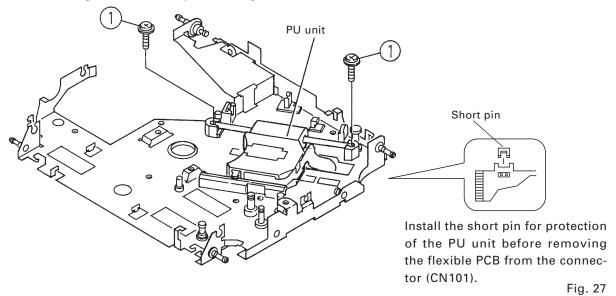
Fig. 26

● **Removing the PU unit**

When tighten screw (1), tighten with a torque of 1.8 kg-cm.

PU unit

Short pin

Install the short pin for protection of the PU unit before removing the flexible PCB from the connector (CN101).
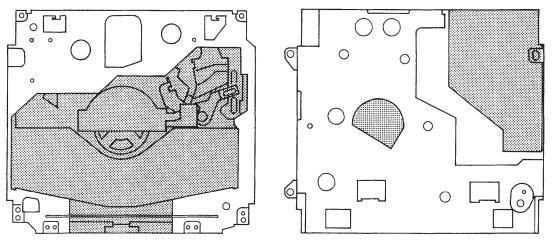
Fig. 27

● **How to hold the CD mechanism module**

Fig. 28

Do NOT hold the parts indicated in dark color.

Fig. 29

How to hold the module